

# UniSite<sup>TM</sup>

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## Universal Programmer

### User Manual

**DATA I/O**

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# ***Safety Summary***

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General safety information for operating personnel is contained in this summary. In addition, specific **WARNINGS** and **CAUTIONS** appear throughout this manual where they apply and are not included in this summary.

## **Antistatic Wrist Strap**

To avoid electric shock, the antistatic wrist strap must contain a 1M $\Omega$  (minimum) to 10M $\Omega$  (maximum) isolating resistor.

## **Definitions**

**WARNING** statements identify conditions or practices that could result in personal injury or loss of life. **CAUTION** statements identify conditions or practices that could result in damage to equipment or other property.

## **Fuse Replacement**

For continued protection against the possibility of fire, replace the fuse only with a fuse of the specified voltage, current and type ratings.

## **Grounding the Product**

The product is grounded through the grounding conductor of the power cord. To avoid electric shock, plug the power cord into a properly wired and grounded receptacle only. Grounding this equipment is essential for its safe operation.

## **Power Cord**

Use only the power cord specified for your equipment.

## **Power Source**

To avoid damage, operate the equipment only within specified line (ac) voltage.

## **Servicing**

To reduce the risk of electric shock, perform only the servicing described in this manual.

## Symbols



This symbol indicates that the user should consult the manual for further detail.



This symbol stands for Vac, for example,  $120\text{ V} \sim = 120\text{ Vac}$ .



This symbol denotes a fuse rating for a user-replaceable fuse.



This symbol denotes the protective ground connection.



This symbol denotes a ground connection for a signal or for an antistatic wrist strap with impedance of  $1\text{M}\Omega$  (minimum) to  $10\text{M}\Omega$  (maximum).

## Certificate of RFI/EMI Compliance with VDE 0871 Limit B

Data I/O certifies that this product complies with the Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) requirements of VDE 0871 Limit B, as required in German postal regulation number vfg 1046/1984, page 1943.

Data I/O further certifies that the German Postal Service (DBP) has been notified of Data I/O's intention to market this equipment in Germany. Data I/O acknowledges that the DBP reserves the right to retest this equipment to verify its compliance with the regulation.

# **Zusammenfassende Sicherheitsinformationen**

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Diese Zusammenfassung enthält allgemeine Sicherheitsinformationen für das Bedienerpersonal. Zusätzlich erscheinen, wenn zutreffend, ausdrückliche Hinweise (ACHTUNG!, VORSICHT!) im Verlauf des Textes. Diese Hinweise werden in dieser Zusammenfassung nicht wiederholt.

## **Antistatik-Armband**

Zum Schutz gegen Stromschläge muß das Antistatik-Armband einen Isolierwiderstand von minimal 1M $\Omega$  und maximal 10M $\Omega$  enthalten.

## **Definitionen**

Mit **ACHTUNG!** überschriebene Hinweise dienen zur Identifizierung und Warnung vor Zuständen oder Vorgängen, die Verletzungen oder Tod herbeiführen können. **VORSICHT!** dient zum Hinweis auf Zustände und Schritte, die zu Geräte- oder andersartigen Sachschäden führen können.

## **Ersetzen von Sicherungen**

Ersetzen Sie zu Ihrem Schutz gegen Brandgefahr eine durchgebrannte Sicherung nur mit einer Sicherung der angegebenen Nennspannung, Stromart und Typenbestimmung.

## **Erdung des Gerätes**

Das Gerät wird durch den dritten Leiter der Netzkabel geerdet. Stecken Sie die Netzschnur zur Vermeidung von Stromschlägen nur in eine geerdete Steckdose. Richtige Erdung ist für den problemfreien Betrieb dieses Gerätes unerlässlich.

## **Netzkabel**

Verwenden Sie nur die für dieses Gerät vorgesehene Netzkabel.

## **Stromquelle**

Vermeiden Sie Beschädigungen des Gerätes durch den Betrieb an der vorgeschriebenen Wechselspannung.

## **Wartung/Reparatur**

Führen Sie zum Vermeiden von Stromschlägen nur die in diesem Handbuch erwähnten Wartungsarbeiten durch.

## Symbole



Dieses Symbol bedeutet, daß das Handbuch weitere dem Bediener hilfreiche Hinweise enthält.



Dieses Symbol bedeutet VAC (Volt Wechselstrom); z.B. 120V  $\sim$  = 120 VAC.



Dieses Symbol bezeichnet Sicherungsdaten für vom Bediener auszuwechselnde Sicherungen.



Dieses Symbol bezeichnet eine Schutz Erde-Verbindung.



Dieses Symbol bezeichnet eine Masseverbindung für ein Signal oder ein Antistatik-Armband mit einer Impedanz von 1M $\Omega$  (min) bis 10M $\Omega$  (max).

## Bescheinigung des Herstellers/Importeurs

Data I/O bescheinigt hiermit, daß dieses Erzeugnis in Übereinstimmung mit den Bestimmungen der DBP-Verfügung Nr. 1046/1984, Seite 1943 (Amtsblattverfügung) funktentstört ist und den Vorschriften der Grenzwertklasse B nach DIN VDE 0871/6.78 entspricht.

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# ***Résumé des consignes de sécurité***

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Ce résumé comprend les informations relatives à la sécurité pour les opérateurs. De plus, tout au long de ce manuel, on retrouve aux endroits appropriés, des **MISES EN GARDE** et des **AVERTISSEMENTS** spécifiques qui ne sont pas inclus dans ce résumé.

## **Bracelet antistatique**

Afin d'éviter tout choc électrique, le bracelet antistatique doit renfermer un résistor de 1M $\Omega$  (minimum) à 10M $\Omega$  (maximum).

## **Définitions**

Les indications de **MISE EN GARDE** signalent les conditions ou pratiques qui pourraient causer des blessures corporelles ou la mort. Les indications d'**AVERTISSEMENTS** signalent les conditions ou pratiques qui pourraient endommager l'équipement ou entraîner d'autres dommages matériels.

## **Remplacement du fusible**

Pour assurer une protection continue contre les risques d'incendie, il faut remplacer le fusible uniquement avec un fusible de voltage, courant et type spécifiés.

## **Mise à la terre du produit**

Le produit est mis à la terre par l'entremise de la borne de mise à la terre du cordon d'alimentation. Pour éviter tout choc électrique, il faut brancher le cordon d'alimentation uniquement dans un réceptacle mis à la terre correctement et dont les fils ont été rattachés correctement. Il est essentiel de mettre cet appareil à la terre pour qu'il puisse fonctionner sans danger.

## **Cordon d'alimentation**

N'utiliser que le cordon d'alimentation spécifié pour votre appareil.

## **Source d'alimentation**

Pour éviter d'endommager l'appareil, il faut respecter la tension (ca) spécifiée.

## **Service**

Afin de réduire les risques de choc électrique, il faut s'en tenir aux opérations d'entretien et de réparation spécifiées dans ce manuel.



## Symboles



Ce symbole indique que l'utilisateur doit consulter le manuel pour obtenir de plus amples détails.



Ce symbole représente le voltage en courant alternatif V ca, par exemple, 120 V  $\sim$  = 120 V ca.



Ce symbole indique la valeur nominale d'un fusible remplaçable par l'utilisateur.



Ce symbole indique la connexion d'isolation à la masse.



Ce symbole indique une connexion de masse pour un signal ou un bracelet antistatique avec une impédance de 1M $\Omega$  (minimum) à 10M $\Omega$  (maximum).

## Certificat de conformité RFI/EMI en accord avec YDE 0871 Limit B.

Data I/O certifie que ce produit est conforme aux exigences du RFI (Radio Frequency Interference) et du EMI (Electromagnetic Interference) pour le VDE 0871 Limit B, tel que requis par le règlement postal allemand numéro vfg 1046/1984, page 1943.

Data I/O certifie de plus que le service postal allemand (DBP) a été informé des intentions de Data I/O de commercialiser cet appareil en Allemagne. Data I/O reconnaît que DBP se réserve le droit de refaire des essais sur l'appareil afin d'en vérifier la conformité avec la réglementation.

# *Riepilogo di sicurezza*

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Questo riepilogo contiene informazioni di sicurezza per il personale addetto alle operazioni. Inoltre, specifiche note di **ATTENZIONE** e di **AVVISO** relative al contesto fanno parte di questo manuale e non sono state ripetute in questo riepilogo.

## **Cinghia antistatica da polso**

Per evitare le scosse elettriche, la cinghia antistatica da polso deve contenere un resistore di isolamento da 1M $\Omega$  (minimo) a 10M $\Omega$  (massimo).

## **Definizioni**

Le note di **ATTENZIONE** identificano condizioni o procedure che potrebbero causare infortuni personali o decessi. Le note di **AVVISO** identificano condizioni o procedure che potrebbero causare danni all'equipaggiamento o ad altra proprietà.

## **Sostituzione dei fusibili**

Per una continua protezione contro l'eventualità di incendi, sostituire il fusibile solo con un fusibile dai valori nominali di tensione, corrente e tipo specificati.

## **Messa a terra del prodotto**

Il prodotto viene messo a terra tramite il conduttore della messa a terra del cavo elettrico. Per evitare scosse elettriche, innestare il cavo elettrico in una presa correttamente cablata e messa a terra. La messa a terra di questo equipaggiamento è essenziale per un funzionamento sicuro.

## **Cavo elettrico**

Usare solo il cavo elettrico specificato per l'equipaggiamento.

## **Fonte di alimentazione**

Per evitare danni, operare l'equipaggiamento solo entro la tensione (ca) di linea specificata.

## **Manutenzione**

Per ridurre il rischio di scossa elettrica, svolgere solo la manutenzione descritta in questo manuale.

## Simboli



Questo simbolo indica che l'utente deve consultare il manuale per ulteriori dettagli.



Questo simbolo indica Vca, ad esempio,  $120V \sim = 120 V_{ca}$ .



Questo simbolo indica la capacità nominale di un fusibile che può venire sostituito dall'utente.



Questo simbolo contrassegna la messa a terra di protezione.



Questo simbolo contrassegna una messa a terra per un segnale o per un cinturino da polso antistatico con impedenza compresa tra  $1M\Omega$  (minimo) e  $10M\Omega$  (massimo).

## Certificato di conformità RFI/EMI con VDE 0871 Limite B

La Data I/O certifica che questo prodotto è conforme ai requisiti per l'Interferenza delle frequenze radio (RFI) e l'Interferenza elettromagnetica (EMI) di VDE 0871 Limite B, secondo il regolamento postale tedesco numero vfg 1046/1984, pagina 1943.

La Data I/O certifica inoltre che il Servizio postale tedesco (DBP) è stato avvisato dell'intenzione della Data I/O di vendere questo equipaggiamento in Germania. La Data I/O riconosce che il DBP si riserva il diritto di riprovare questo equipaggiamento per verificare la relativa conformità al regolamento.

# *Resumen de seguridad*

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En este resumen se proporciona información general sobre seguridad para el personal operativo. Además, aparecen notas de **ADVERTENCIA** y **CUIDADO** por todo el manual, donde son apropiadas y no se incluyen en este resumen.

## **Muñequera antiestática**

Para evitar descargas eléctricas, la muñequera antiestática debe contener un resistor aislante de 1 M $\Omega$  (como mínimo) a 10 M $\Omega$  (como máximo).

## **Definiciones**

Las notas de **ADVERTENCIA** identifican condiciones o prácticas que pudieran dar como resultado lesiones personales o pérdida de la vida. Las notas de **PRECAUCION** identifican condiciones o prácticas que pudieran dar como resultado daños en equipos u otras propiedades.

## **Reemplazo de fusibles**

Para tener protección continua contra las posibilidades de que se produzcan incendios, reemplace los fusibles sólo con otros del tipo, el voltaje y la corriente que se especifican.

## **Conexión a tierra del producto**

El producto se conecta a tierra por medio del conductor de masa del cable de alimentación. Para evitar descargas eléctricas, enchufe el cable de alimentación en un receptáculo alambrado y conectado a tierra de modo correcto.

## **Cable de alimentación**

Use sólo el cable de alimentación especificado para el equipo de que se trate.

## **Fuente de alimentación**

Para evitar daños, haga funcionar el equipo sólo dentro de los voltajes de línea especificados (de ca).

## **Servicios**

Para reducir los riesgos de que se produzcan descargas eléctricas, lleve a cabo sólo los servicios descritos en este manual.

**Símbolos**



Este símbolo indica que el usuario debería consultar el manual para obtener más detalles.



Este símbolo representa V ca. Por ejemplo,  
 $120\text{ V} \sim = 120\text{ V ca.}$



Este símbolo denota un valor nominal para un fusible reemplazable por el usuario.



Este símbolo indica la conexión a tierra de protección.



Este símbolo equivale a una conexión a tierra para una señal o una banda pulsera de antiestática con una impedancia de  $1\text{M}\Omega$  (mínima) a  $10\text{M}\Omega$  (máxima).

**Certificado de cumplimiento de RFI/EMI con VDE 0871 Límite B**

Data I/O certifica que este producto satisface los requisitos de interferencia de radiofrecuencias (RFI) e interferencias electromagnéticas (EMI) de VDE 0871 Límite B, como se requiere en el reglamento postal alemán número vfg 1046/1984, página 1943.

Además, Data I/O certifica también que el Servicio Postal Alemán (DBP) ha recibido una notificación de la intención que tiene Data I/O de vender estos equipos en Alemania. Data I/O reconoce que el DBP se reserva el derecho a reaverificar estos equipos para comprobar su cumplimiento de los reglamentos.

# *Preface*

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The Preface includes details about contacting Data I/O for technical assistance, repair and warranty services, and Keep Current™ subscription service. The Preface also explains the Bulletin Board Service, typographic conventions and more.

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## **Data I/O Customer Support**

### **United States**

For technical assistance, contact

**Data I/O Customer Resource Center**

Telephone: 800-247-5700

Fax: 206-882-1043

For repair or warranty service, contact

**Data I/O Central Dispatch**

Telephone: 800-735-6070

For Keep Current subscription service, contact

**Data I/O Sales**

Telephone: 800-332-8246

### **Canada**

For technical assistance, contact:

**Data I/O Customer Resource Center**

Telephone: 800-247-5700

Fax: 206-882-1043

For repair, warranty service, or Keep Current subscription service, contact:

**Data I/O Canada**

6725 Airport Road, Suite 302

Mississauga, Ontario, L4V 1V2

Telephone: 416-678-0761

Fax: 416-678-7306

## **United Kingdom**

For technical assistance, repair, warranty service, or Keep Current subscription service, contact:

**Data I/O Limited**  
660 Eskdale Road  
Winnersh, Wokingham  
Berkshire RG11 5TS  
Telephone: 0734-440011  
Fax: 0734-448700

## **Japan**

For technical assistance, repair, warranty service, or Keep Current subscription service, contact:

**Data I/O Japan**  
Sumitomoseimei Higashishinbashi Bldg. 8F  
2-1-7, Higashi-Shinbashi  
Minato-Ku, Tokyo 105  
Telephone: 03-3432-6991  
Fax: 03-3432-6094 (Sales)  
03-3432-6093 (Other)  
Telex: 2522685 DATAIO J

## **Germany**

For technical assistance, repair, warranty service, or Keep Current subscription service, contact:

**Data I/O Electronic Systems Vertriebs GmbH**  
Lochhammer Schlag 5a  
D-8032 Gräfelfing  
Telephone: 089-858580  
Fax: 089-8585810

## **Other European Countries**

For technical assistance, repair, warranty service, or Keep Current subscription service, contact the office below and ask for the number of your local Data I/O representative:

**Data I/O Europe**  
660 Eskdale Road  
Winnersh, Wokingham  
Berkshire RG11 5TS  
United Kingdom  
Telephone: 44-0734-448899  
Fax: 44-0734-440070

## **Other Countries Worldwide**

For technical assistance, repair, warranty service, or Keep Current subscription service, contact the office below and ask for the number of your local Data I/O representative:

**Data I/O Intercontinental**  
10525 Willows Road N.E.  
P.O. Box 97046  
Redmond, WA USA 98073-9746  
Telephone: 206-881-6444  
Fax: 206-882-1043  
Telex: 4740166

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## Technical Assistance

You may contact Data I/O for technical assistance by calling, sending a fax or electronic mail (e-mail), or using the Bulletin Board Service (BBS).

To help us give you quick and accurate assistance, please provide the following information:

- Product version number
- Product serial number (if available)
- Detailed description of the problem you are experiencing
- Error messages (if any)
- Device manufacturer and part number (if device-related)

### Calling

Call the appropriate Data I/O Customer Support number listed at the front of the Preface.

When you call, please be at your programmer or computer, have the product manual nearby, and be ready to provide the information listed above.

### Sending a Fax

Fax the information listed above with your name, phone number, and address to the appropriate Data I/O Customer Support fax number listed at the front of the Preface.

### Sending E-mail

To reach Data I/O via e-mail, send a message including your name, phone number, e-mail address, and the information listed above to one of the following addresses:

`techhelp@Data-IO.COM`

or

`{apple|decwrl|rutgers|gatech|uunet}!pilchuck!techhelp`

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*Note: Select one of the five addresses listed above in braces. For example, you might send e-mail to the following address:*  
`uunet!pilchuck!techhelp.`

See your system administrator if you need more information on which address to use.

### Using the BBS

To reach Data I/O via the BBS, include your name, phone number, e-mail address, and the information listed above in a message, and send it to the BBS as described in the following section.



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## Bulletin Board Service

From the Data I/O Bulletin Board System (BBS) you can obtain a wide range of information on Data I/O products, including current product descriptions, new revision information, technical support information, helpful application notes, and other miscellaneous information.

Using the BBS, you can access device support information, request support for a particular device, and leave messages for the BBS system operator, Customer Support personnel, or other customers. The BBS also includes many downloadable DOS utilities.

To access the U.S. Data I/O BBS, call 1-206-882-3211. Multiple lines are available, all supporting 1200/2400/9600/19200 baud, with U.S. Robotics Dual/HST V.32*bis*/V.42*bis* modems. The modems are set to 8 data bits, 1 stop bit, and no parity. Online help files provide more information about the BBS and its capabilities.

For your nearest Data I/O Bulletin Board System outside the U.S., contact Data I/O Customer Support at the numbers listed at the front of the Preface.

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## Warranty Information

Data I/O Corporation warrants this product against defects in materials and workmanship at the time of delivery and thereafter for a period of one (1) year.

The foregoing warranty and the manufacturers' warranties, if any, are in lieu of all other warranties, expressed, implied or arising under law, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Data I/O maintains customer service offices throughout the world, each staffed with factory-trained technicians to provide prompt, quality service. For warranty service, contact Data I/O Customer Support at the numbers listed at the front of the Preface.

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## Keep Current Subscription Service

Data I/O offers a one-year renewable subscription to keep your product and documentation up-to-date with the latest features and device support. This subscription, called Keep Current subscription service, also incorporates manufacturer-recommended changes to existing device support to maintain optimum yields, throughput, and long-term reliability.

For more information, or to order Keep Current subscription service, contact Data I/O Customer Support at the numbers listed at the front of the Preface.

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## Repair Service

After the warranty period expires, repair services are available at Data I/O Service Centers on a time-and-materials basis, and through a fixed price annual agreement that covers all parts and labor needed to correct normal malfunctions. The annual agreement includes semiannual performance certification.

For more information, or to order a Repair Service Agreement, contact Data I/O Customer Support at the numbers listed at the front of the Preface.

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## End User Registration and Address Change

If the end user for this product or your address has changed since the Registration Card was mailed, please notify Data I/O Customer Support. This ensures that you receive information about product enhancements. Be sure to include the product serial number, if available.

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## Typographic Conventions

Throughout this manual different typographic conventions represent different cases of input and output.

### Keys

Keys appear in boxes (for example, **Q**) or as bolded text.

The **Enter** key (or on some keyboards, the **Return** key) is represented by this symbol: **↵**.

### Key Combinations

An instruction for pressing two keys at once, such as **^Z** (Control and Z), is represented by two key boxes separated by a plus, such as **Ctrl** + **Z**.

A key combination like **Esc** **Ctrl** + **T** means press and release **Esc**, then press **Ctrl** and **T** at the same time.

### Variable Input

Variable input is italicized and should be replaced with the requested information. For example, "enter *copy filename.hex*" means type **copy** just as you see it and replace *filename.hex* with the name of your file.

### Optional Input

Optional items of a command are shown in brackets.

*[option1] [option2]...[optionn]*

Items separated by a vertical bar (for example, **OR|OR|...**) are mutually exclusive; that is, only one of the options listed can be specified.

### Displayed Text

Text displayed on an LCD or screen appears in a typewriter-like typeface.

You will see this text displayed on the screen.

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## Where Do I Find . . . ?

Below is a quick guide to some of the important topics in this manual.

<b>Terminal Control</b>	To learn what equipment you need in order to control UniSite from a PC or a terminal, read Chapter 2, "Setup and Installation."
<b>Tutorial</b>	To learn how to use the UniSite System, read Chapter 4, "Tutorial."
<b>Inserting/Removing Devices</b>	To learn about UniSite's method of socketing devices, read the "Insert the Device" section of Chapter 4.
<b>High Speed Download</b>	To learn how to download data files from a PC to UniSite at 115.2K baud, read the "Setting Up High Speed Download" section in Chapter 2. Also, see the <i>HiTerm User Manual</i> , which is behind the Utilities tab in this binder.
<b>MatchBooks</b>	To learn how MatchBooks work, and to learn how to install a MatchBook, see the <i>PinSite User Manual</i> .
<b>CRC Commands</b>	To learn how to use Computer Remote Control, and to learn about the CRC commands and messages, see Chapter 6.
<b>Specifications</b>	To learn about the UniSite's technical and operating specifications, read the "Specifications" section of Chapter 1.
<b>Compatible Terminals</b>	For a list of terminals that are compatible with UniSite, see the "Compatible Terminals" section of Chapter 2.
<b>A User Guide</b>	Chapters 1-4 are task-oriented and are aimed at the beginning to mid-level user. Read these four chapters if you are unfamiliar with UniSite, or if you are new to programmers.
<b>A Reference Guide</b>	Chapters 5-8 are function-oriented and are aimed at the mid-level to advanced user. These chapters are designed to be used as reference material and assume you are familiar with UniSite.



# **1** *Introduction*

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## **What Is UniSite?**

The UniSite™ Universal Programmer is a tool for programming, verifying, and testing all programmable device technologies and packaging. The many facets of UniSite allow it to address a variety of needs in both engineering and manufacturing environments.

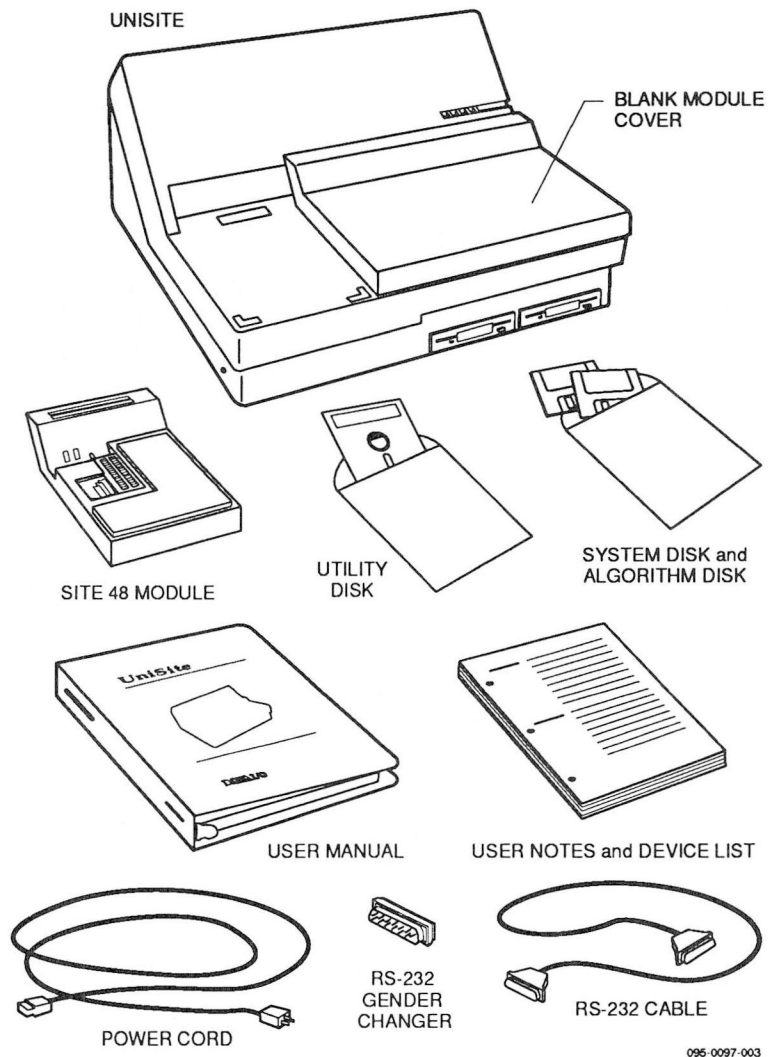
The basic UniSite comes with 1MB of memory and support for DIP devices upto and including 40 pins. Options are available for support of devices in excess of 100 pins, in many package types, including DIP, PLCC, LCC, QFP, PGA, and SOIC.

Other options available for UniSite include a gang/set programming module for EEPROMs and EPROMs, a gang programming module for FPGAs, and an interface for automated device handlers.

## Contents of Package

Figure 1-1 illustrates the contents of the UniSite system. You should check the contents of your UniSite against the items shown in Figure 1-1.

**Figure 1-1**  
*Contents of the UniSite Universal Programmer*



*Note: You will not receive a blank module cover if you ordered a large module, such as PinSite or SetSite, when you ordered your UniSite.*

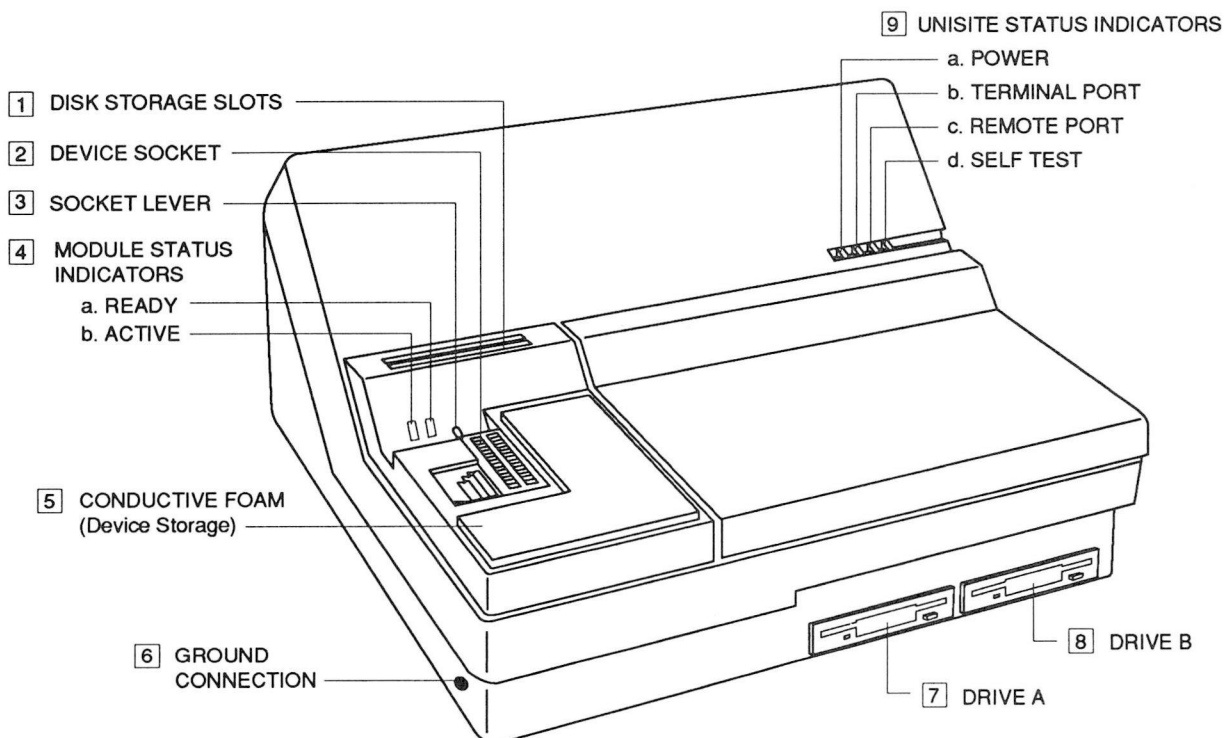
## UniSite External Features

### The Front Panel

The front panel features of UniSite are shown in Figure 1-2.

*Figure 1-2*

*Front Panel Features*



095-0047-002

1. **Disk Storage Slots** — A convenient place to store two data disks.
2. **Device Socket** — Holds the device to be programmed or the master device to be read.
3. **Socket Lever** — Locks the device into the device socket.
4. **Module Status Indicators** — Provides information about the operational status of the module.
  - a. **ACTIVE Indicator** — This lamp is lit when a device-related operation is in progress.
  - b. **READY Indicator** — This lamp is lit when the device socket is ready to accept a device.
5. **Conductive Foam** — Provides a convenient, safe place to store static-sensitive devices while using UniSite.
6. **Ground Connection** — Connect an antistatic wrist strap here.
7. **Drive A** — The main disk drive. Insert the System disk here.
8. **Drive B** — The auxiliary disk drive. Insert the Algorithm disk here.

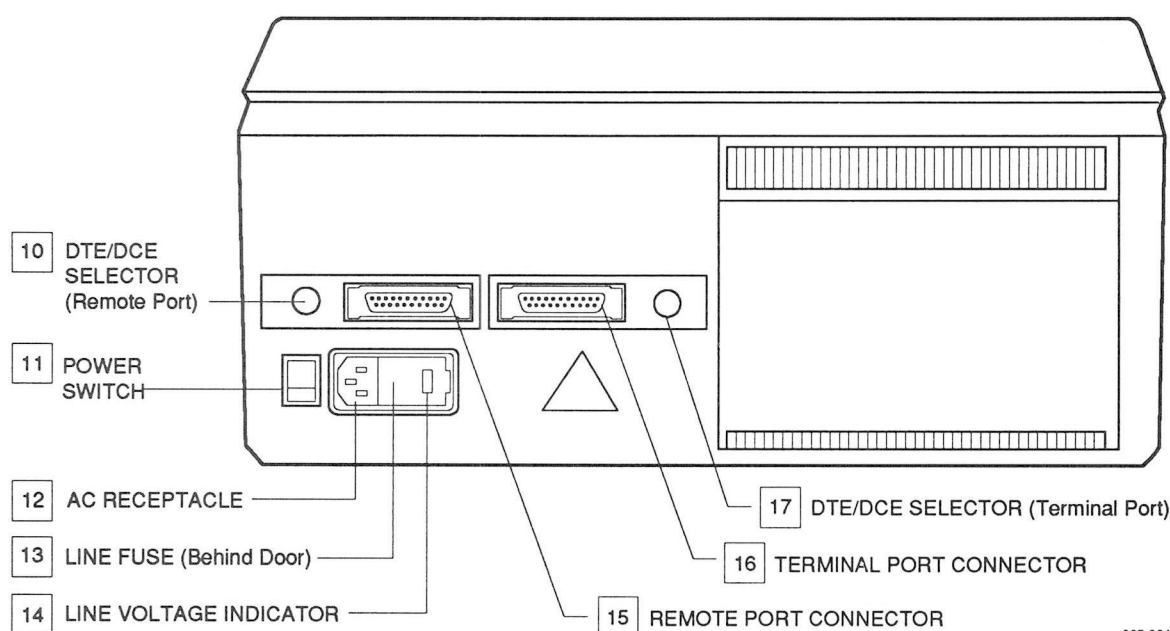


9. **UniSite Status Indicators** — These indicators provide information about UniSite's operational status:
  - a. **Power Indicator**—This lamp is lit when the power is on.
  - b. **Terminal Port Indicator**—This lamp is lit when equipment is connected properly to the Terminal port.
  - c. **Remote Port Indicator**—This lamp is lit when equipment is connected properly to the Remote port.
  - d. **Self-test Indicator**—This lamp is lit when UniSite is performing a self-test.

## The Back Panel

The back panel features of UniSite are shown in Figure 1-3.

**Figure 1-3**  
Back Panel Features



095-0048-002

10. **Remote Port DTE/DCE Selector** — Configures the Remote port as Data Terminal Equipment or Data Communication Equipment.
11. **Power Switch** — Applies AC power to UniSite.
12. **AC Receptacle** — Connects UniSite to AC power.
13. **Line Fuse** — Houses the line fuse.
14. **Line Voltage Indicator** — Shows UniSite's line voltage.
15. **Remote Port** — Connects UniSite to PCs/workstations/terminals/file servers/etc.
16. **Terminal Port Connector** — Connects UniSite to PCs/workstations/terminals/file servers/etc.
17. **Terminal Port DTE/DCE Selector** — Configures the Terminal port as Data Terminal Equipment or Data Communication Equipment.

## Specifications

<b>Functional</b>	<b>RAM</b>	1MB standard (up to 8MB optional)
	<b>Disk Format</b>	Double-sided, double-density 3.5-inch disk with 135 tracks per inch. 720KB formatted.
	<b>Controller</b>	Motorola 68000 16-bit microprocessor
	<b>Terminal Support</b>	Interfaces with ANSI 3.64 compatible terminals, IBM PCs and compatibles running a terminal emulator program, and many popular ASCII terminals.
	<b>Communication Standard</b>	RS-232C
	<b>Data transfer rate</b>	110 to 19.2K baud (up to 115.2K baud using HiTerm)
<b>Power Requirements</b>	<b>Operating Voltages</b>	100 - 120 Vac $\pm 10\%$ or 220 - 240 Vac $\pm 10\%$
	<b>Frequency Range</b>	48 - 63 Hz
	<b>Power Consumption</b>	500 VA maximum
	<b>Fuse Ratings</b>	250V/6A/F (Fast Blow)
<b>Physical and Environmental</b>	<b>Dimensions</b>	18.06h x 43.48w x 36.20d cm 7.11h x 17.12 w x 14.25d inches
	<b>Weight</b>	9.1 kg (20 lbs.)
	<b>Shipping Weight</b>	11.4 kg (25 lbs.)
	<b>Temperature</b>	Operating: +10° to +40°C (+50° to +105°F) Storage: +4° to +50°C (+40° to +122°F) Transportation: -40° to +55°C (-40° to +130°F)
	<b>Relative Humidity</b>	Operating: 20 to 80% noncondensing Storage: 10 to 90% noncondensing
	<b>Altitude</b>	Operating: To 5,000 meters Storage: To 15,000 meters
	<b>Safety</b>	UniSite is designed to comply with the following safety standards: <b>Underwriters Laboratories</b> — UL 1244 <b>Canadian Standards Association</b> — CSA C22.2 NO. 231 <b>International Electrotechnical Commission</b> — IEC 348 and IEC 1010-1 <b>Verband Deutscher Electrotechniker</b> — VDE 0411

**Electromagnetic Emissions**

UniSite is certified to meet VDE 0871 Limit B.

**Electrostatic Discharge (ESD)**

IEC 801-2 ( $\pm 15$  Kv)

**Calibration**

UniSite is a state-of-the-art self-calibrating precision instrument. All calibration is performed by software and is compared to a laser trimmed voltage reference. See the *UniSite Maintenance Manual* for information on checking the reference voltage and the master clock.

UniSite calibrates itself every time it is powered up and every time a complete Self-test cycle is run. To ensure that your UniSite remains fully calibrated, Data I/O recommends that you cycle power or run a complete Self-test cycle at least every three months.

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## Available Options

The items listed below are designed to complement the UniSite Universal Programmer. For more information, or to order an item below, contact Data I/O Customer Support as listed in the Preface.

**Keep Current Subscription Service**

Data I/O offers a one-year subscription to keep your programmer and documentation up-to-date with the latest features and device support. This subscription also incorporates manufacturer-recommended changes to existing device support to maintain optimum yields, throughput, and long-term reliability.

**Keep Current Express Subscription Service**

The Express option gives you immediate access to new and updated programming algorithms via our Keep Current BBS—up to three months before the algorithms are available in a quarterly update kit. The new Express option, available to Keep Current members on a yearly basis, allows unlimited access to all new algorithms. For more information, see the Keep Current Express documentation located behind the Keep Current tab, or contact Data I/O Customer Support.

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*Note: The Express option may not yet be available in all areas. Contact Data I/O Customer Support for more information.*

**RAM Upgrades**

Expands system RAM. Contact Data I/O Customer Support for more information on RAM upgrades.

**PinSite**

Expands device support to include several different package types, including PGA, PLCC, LCC, and SOIC. With the additional pin drivers located onboard PinSite, UniSite can support devices up to 84 pins. Uses MatchBook™ Device Carriers to improve throughput and reduce damage that may be caused by traditional sockets for surface-mount devices.

<b>PPI Base and Adapters</b>	A PinSite Base and Adapter combination that expands support to include devices with more than 84 pins and in additional package styles, such as SDIP, QFP, and memory cards.
<b>HandlerSite</b>	Connects UniSite to popular high-speed device handlers for volume programming. Includes HandlerLink™ software for programming and data file management, as well as real-time control of the UniSite and handler. All programming functions are initiated from the PC keyboard. Provides easy "one-button" production setup.
<b>SetSite</b>	Provides set and gang programming support for up to eight E/EPROMs. Accommodates skinny or wide DIP EEPROMs and EEPROMs up to 40 pins.
<b>Site48</b>	Replaces Site40 on existing UniSites and increases support for DIP devices to 48 pins.
<b>Second Disk Drive</b>	A second 3.5-inch disk drive for UniSite. Adding a second disk drive helps eliminate disk swaps and helps speed up device operations, such as programming and verifying. The disk drive does not require factory installation and can be installed on site.
<b>USM-340 (Actel FPGA Gang Module)</b>	Provides gang programming for up to eight Actel FPGAs. Eight 68-pin PLCC devices can be programmed simultaneously. Requires a minimum of 1MB RAM in UniSite to program the Actel 1010. For larger devices, such as the Actel 1020, a minimum of 4MB RAM is required.
<b>Pin Driver</b>	Provides additional support for devices with higher pin counts. Each pin driver board provides additional support for 4 pins. For example, if your UniSite has 10 pin drivers, you can program devices with up to 40 pins. If you want to program 48-pin devices, you will need to add two pin driver boards to your UniSite.
<b>Maintenance Manual</b>	Contains information on the following: disassembly/reassembly, circuit description, maintenance, and troubleshooting.
<b>Cable Set</b>	Includes an additional RS-232C cable and gender changer.
<b>Carrying Case</b>	Protects UniSite from damage during travel. The custom designed, soft-sided carrying case holds UniSite, the Algorithm disk, the System disk, and this manual. The Carrying Case is ideal if you will be using UniSite in the field.
<b>QuickComm</b>	A portable, easy to use, remote terminal with a simplified user interface designed for use in a production environment with UniSite. QuickComm makes UniSite completely portable for use in a field service environment. QuickComm uses Data I/O's Computer Remote Control command set to communicate with UniSite.

### **PROMlink-6**

PC/Programmer Interface Software designed for use with UniSite. PROMlink-6 runs on an IBM PC (or compatible) and allows you to control UniSite from a personal computer for streamlined and enhanced programming operations. PROMlink-6 features automatic programming file configuration, full-screen editing, and error-logging. PROMlink-6 also features a new windowed interface, extensive online context-sensitive help and full mouse support.

## 2 *Setup and Installation*

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This chapter describes how to set up UniSite and get it working with your equipment. Before you read this chapter, make sure you have read the previous chapter, "Introduction."

This chapter guides you through configuring the hardware and installing the system software. The process is divided as follows:

1. Install a Module
2. Check the Line Voltage
3. Choose Your Configuration
4. Connect Your Equipment
5. Insert the Algorithm and System Disks
6. Power Up UniSite
7. The Power-On Screen

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### **Before You Begin**

Before you begin the setup and installation, make sure you have read and understand the terms of the Software License Agreement, which is printed on the outside of the envelope containing UniSite's Algorithm and System disks.

**IMPORTANT:** If you do not agree with the terms of the licensing agreement, do not open the software package. Opening the package indicates that you have accepted the terms of the agreement.

Throughout this chapter you will find some terms you might not be familiar with. Those terms, and many others, are described in the Glossary. Three terms used frequently in this chapter are described below.

**PC** — A DOS-based personal computer, such as an IBM PC or compatible, or other microcomputer. The PC can be used to control UniSite and can be used for remote storage of data files.

**Host** — A minicomputer, such as a Sun, Dec, or Apollo workstation. You can use the host to control UniSite and for remote storage of data files.

**Terminal** — A stand-alone terminal, such as the DEC VT-100, Qume VT-101, and the Wyse WY-30/40/70 family of terminals.

---

## 1. Install a Module

This section tells you how to insert a module into UniSite, and tells you how to insert and remove devices. Although these might seem like simple procedures, we strongly recommend you read this section.

### About Modules

The Module serves as the interface between the device and UniSite. The modules available at the time of the printing of this manual are listed in the "Options" section of Chapter 1. For a current list of all available modules, or for more information, contact Data I/O Customer Support as listed in the Preface.

## Removing the Top Cover

When you receive your UniSite, a protective cover may be installed in place of a large module. The following steps tell you how to remove the top cover, remove the protective cover, and replace the top cover.

We suggest that you do not remove the protective cover until you want to install a large module in UniSite. If you don't want to remove the protective cover, skip to the section titled "Installing a Module."

---

**WARNING:** The procedures described in this section are designed to be performed by personnel qualified to service electronic equipment. Do not attempt to perform these procedures unless you are qualified to do so.

---

### Before You Begin

Depending on when your UniSite was manufactured, you may not have to remove the top cover to remove the protective cover from UniSite. If your UniSite bears the part number 901-0058-011 or later, you have a snap-off protective cover. The serial number is located on the rear panel of UniSite.

If you have a snap-off protective cover, remove it by snapping the cover off. If you choose, you can leave the protective cover in place until you want to install a large module, such as PinSite or SetSite.

### What You Need

To remove the top cover, you will need the following tools and equipment:

- #1 Phillips screwdriver
- Grounded wrist strap
- Antistatic workstation

Follow the steps below to remove the blank top cover from UniSite.

1. Place UniSite and the screwdriver onto the antistatic workstation.
2. Turn off UniSite's power switch. Unplug the power cord and any other cables connected to the back of UniSite.

---

**WARNING:** To avoid electrical shock, disconnect the power cord before removing the top cover. Do not reconnect the power cord until the top cover has been reinstalled.

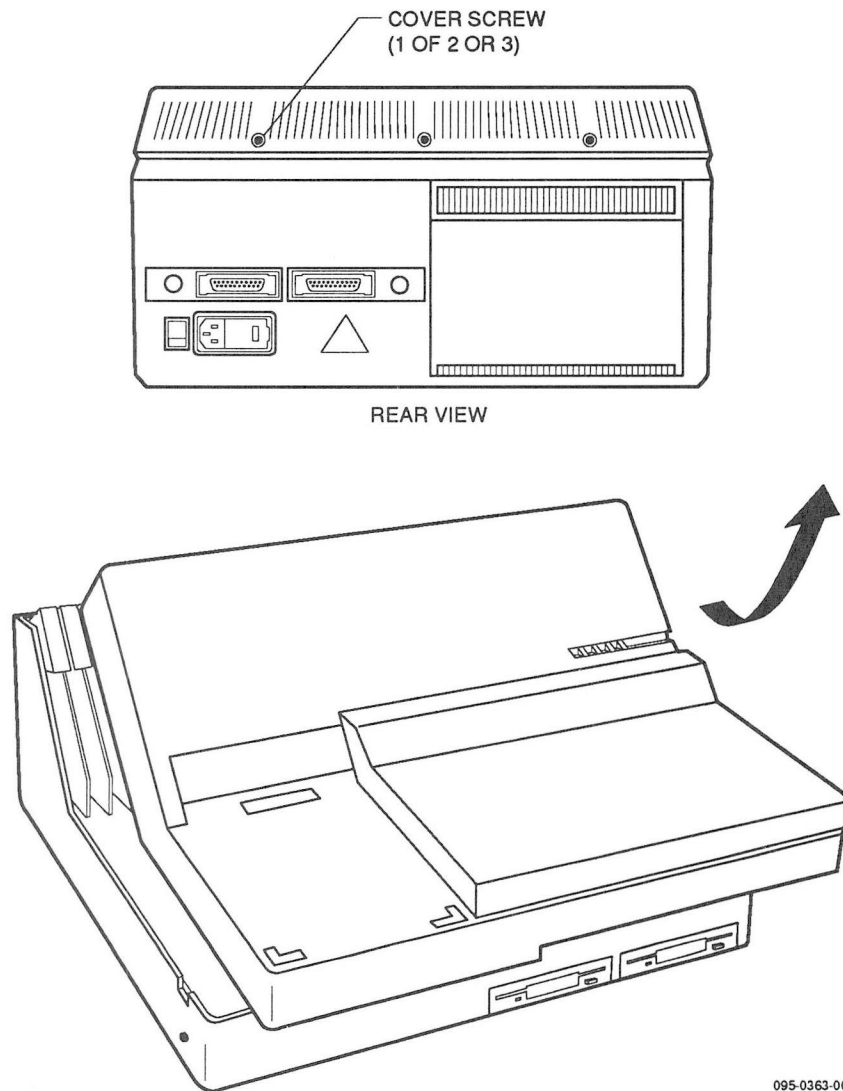
---

3. Remove any large or small modules that are installed in UniSite.



4. Using the screwdriver, remove the two or three top cover screws shown in Figure 2-1. Set the screws aside; you will need them when you reattach the top cover.

*Figure 2-1*  
*Removing the Top Cover*



095-0363-002

5. Slide the top cover toward the front of UniSite. Then lift the cover straight up.
6. Turn the top cover over and remove the two screws that attach the dummy large module to the top cover.
7. Slide the top cover back on UniSite.
8. Replace the screws you removed in step 4.

## Installing a Module

Below are instructions for installing a small module and a large module.

### What Goes Where?

UniSite is designed to accept two modules: a small one on the left and a large one on the right. Each module allows you to support a specific package style, or support special types of programming operations such as set/gang programming.

### Installing a Small Module

To install a small module, such as Site48, follow the steps below:

---

**CAUTION:** *Remove any devices in a module before you install the module in UniSite.*

1. Insert the two retaining hooks on the bottom of the small module into the two slots on the top left side of UniSite. Figure 2-2 shows the location of the retaining hooks on the module and also shows the location of the slots for the small module on UniSite.
2. Carefully lower the back of the small module until the module connector touches its mating connector on UniSite.
3. To ensure complete contact, firmly press down on the rear of the small module.

You do not need to use excessive force when pressing on the module.

---

**CAUTION:** *You can damage UniSite by exerting too much force on the module.*

### Installing a Large Module

To install a large module, follow the steps below:

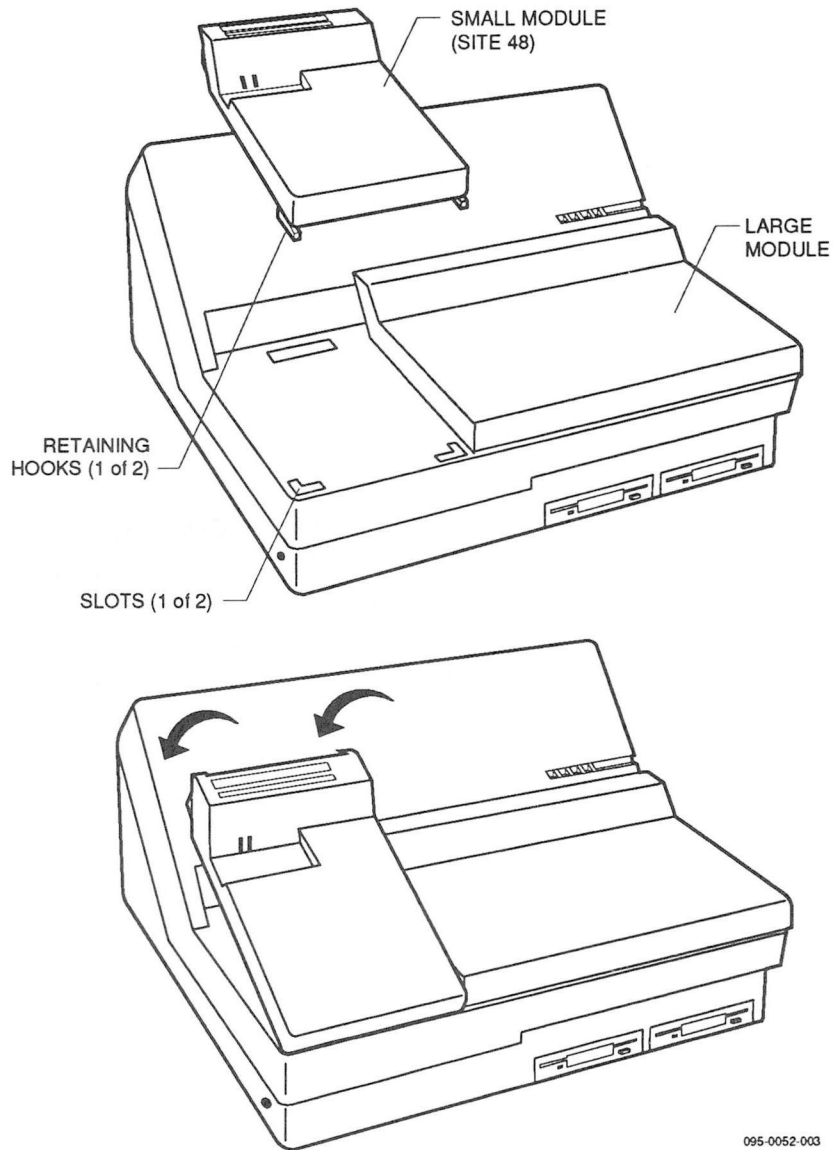
1. Insert the two retaining hooks on the bottom of the large module into the two slots on the top right side of UniSite. Figure 2-2 shows a large module already inserted into UniSite.
2. Carefully lower the back of the large module until the module connector touches its mating connector on UniSite.
3. To ensure complete contact, firmly press down on the rear of the large module.

You do not need to use excessive force when pressing on the module.

---

**CAUTION:** *You can damage UniSite by exerting too much force on the module.*

**Figure 2-2**  
*Installing a Module*



095-0052-003

## Removing a Module

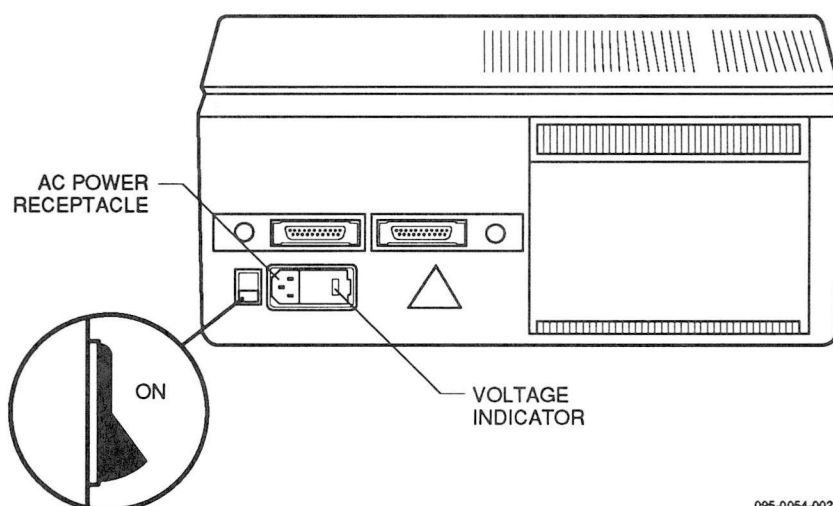
To remove a large module or a small module, follow the steps below:

1. Make sure you are not performing any device operations, such as loading, programming, or verifying.
2. Make sure the Active LED on the module is not lit.
3. Remove any devices in the module.
4. Lift the rear of the module until the retaining hooks on the front of the module are disengaged from the slots on the top of UniSite.
5. Set the module aside.

## 2. Check the Line Voltage

Verify that the line voltage is correct by checking the line voltage indicator on the rear panel. Figure 2-3 shows the location of the voltage indicator.

**Figure 2-3**  
*UniSite's Rear Panel*



095-0054-002

**CAUTION:** *Damage to the equipment may occur if the instrument is operated with the wrong voltage.*

If the line voltage is correct, continue with the next section.

If the line voltage is not correct, skip to the section titled "Changing the Line Voltage," which is located at the end of this chapter. Continue with the next section after you have changed the line voltage.

---

### 3. Choose Your Configuration

Review the equipment you have available and then decide which of the following configurations you will use to control UniSite.

- Connecting to a PC
- Connecting to a host
- Connecting to a terminal

Once you have decided the configuration you will use, skip to that section. For example, if you decide to connect to a terminal, skip to the section titled "Connecting to a Terminal."

---

### 4. Connect Your Equipment

This section is divided into three subsections:

- Connecting to a PC
- Connecting to a Host
- Connecting to a Terminal

Skip to the section that applies to your configuration.

#### Connecting to a PC

Connecting UniSite to a DOS-based PC allows you to take advantage of all UniSite's capabilities. For this configuration, you must use terminal emulation software, which allows UniSite and the PC to communicate.

#### What You Need

To connect UniSite to a PC, you need the following:

- A free RS-232C serial port on the PC. Usually serial ports on a PC are labeled COM1, COM2, etc.
- Terminal emulation software. We suggest you use HiTerm, which is supplied with UniSite and enables you to download files to UniSite at 115.2K baud.
- A 25-pin serial cable. If you need more information about which type of cable will work with UniSite, or if you need to build your own cable, see the section later in this chapter titled "More About Cables."

## Making the Connections

To connect UniSite to a DOS-based PC, follow the steps below.

1. Connect one end of the RS-232C serial cable to the serial port connector on the back of the PC.

While PC serial ports are usually labeled COM1, COM2, etc., some PCs may label serial ports differently. Consult the documentation that came with the PC for more information.

---

**CAUTION:** *To minimize electromagnetic interference, use only properly shielded and terminated cable.*

2. Connect the other end of the serial cable to the Terminal port on the back of UniSite.

## Installing HiTerm

HiTerm is provided on a 360K double-sided, double density 5-1/4 inch disk in IBM format. You can run HiTerm from a floppy disk or hard disk. These instructions tell you how to install HiTerm on a hard disk. If you want to install HiTerm on a floppy disk, consult the *HiTerm User Manual* behind the Utilities tab in this binder.

These instructions assume you have working knowledge of DOS. If you have questions, consult your DOS manual or the *HiTerm User Manual*.

## Why HiTerm?

As mentioned above, you must use terminal emulation software to control UniSite and to permit transferring data files between the PC and UniSite. HiTerm, a VT-100 terminal emulator written especially for UniSite, allows you to download files to UniSite at 115.2K baud. Also, HiTerm automatically handles all the file management tasks, which makes sending and receiving files easier.

Follow the steps below to install HiTerm on your hard disk drive.

1. Copy all the files from the HiTerm disk to the PC's hard disk.
2. Make sure the PATH statement in the `autoexec.bat` file includes the subdirectory where the HiTerm files reside.
3. Edit the `prg9600.cfg` file so it reflects the setup of your PC. This configuration file, specifying the operating mode, communication parameters, and PC type, is read when HiTerm is invoked. If HiTerm can not read the configuration file, HiTerm will use the following default settings:

Mode – programmer  
Baud rate – 9600  
Parity – none  
Data bits – 8  
Stop bits – 1  
COM port – 1  
PC type – auto detect

---

*Note: The PC type parameter applies only to Hiterm version 3.10 and later. If you received an earlier version of HiTerm (3.01 for example) set the configuration file as described above but do not include the PC type parameter.*

When you edit the **prg9600.cfg** configuration file, be sure each line conforms to the specifications shown below.

- **First line – mode.** Enter either General (G) or Programmer (P). Specify Programmer mode for use with UniSite. Only the first character of the word is significant.
- **Second line – baud rate.** The complete number is required (for example, 9600, not 96). See the *HiTerm User Manual* behind the Utilities tab in this binder for a list of baud rates supported by HiTerm.
- **Third line – parity.** Specify None, Odd, or Even (N,O,E). Only the first character of the word is significant.
- **Fourth line – data bits.** Specify 7 or 8.
- **Fifth line – stop bits.** Specify 1 or 2.
- **Sixth line – COM port.** Specify 1 or 2.
- **Seventh line – PC Type.** Specify IBM, NEC or Autodetect (I,N,A). Select N for NEC's PC-9800 family of PCs, I for IBM-compatible PCs, or A for Autodetect if you are not sure.

---

*Note: The PC type parameter applies only to Hiterm version 3.10 and later. If you received an earlier version of HiTerm (3.01 for example) set the configuration file as described above but do not include the PC type parameter.*

4. Edit the **program.bat** file to reflect the location of the configuration files. Edit the two lines that invoke HiTerm so they point to the drive and subdirectory containing the HiTerm files. An example of the **program.bat** file modified to reflect HiTerm's installation in the **c:\util\hiterm** directory is shown below.

---

*Note: In the following example, bold print indicates items you should modify if your configuration is different.*

```
echo off
Rem: HITERM will use the configuration filename
Rem: from command line if present.
If not (%1) == () HITERM c:\util\hiterm\%1

Rem: HITERM will use PRG9600.CFG if no
Rem: configuration file is specified.
If (%1) == () HITERM c:\util\hiterm\prg9600.cfg
```

5. Installation of HiTerm is now complete. Reboot your PC.

### Checking the Communication Parameters

With UniSite connected to the PC and the terminal emulation software installed on the PC, adjust the communication parameters on the port connected to UniSite as follows:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit
- Full duplex
- CTS/DTR handshaking

---

*Note: CTS/DTR (Hardware Handshake) is enabled as the default. However, if those signals aren't connected, UniSite will sense this and still communicate properly using XON/XOFF (Software Handshake). UniSite always uses XON/XOFF regardless of whether CTS/DTR handshake is enabled.*

Once you have established communication and UniSite is operating, you can change the communication parameters to suit your needs. Consult the manual supplied with the PC if you need to change the PC's communication parameters.

### The Next Step

UniSite is now connected to your PC. Skip to the section titled "5. Insert the Algorithm and System Disks" to continue with the setup and installation of UniSite.



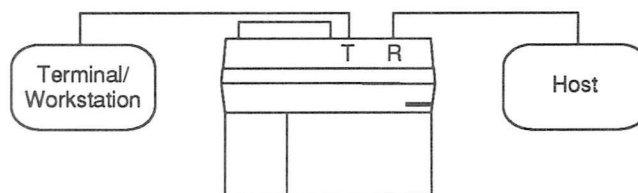
## Connecting to a Host

Connecting UniSite to a host allows you to use the host for remote file storage.

### Transparent Mode

Transparent mode, shown in Figure 2-4, is a feature of UniSite that allows the programmer to be inline between your host computer and a terminal. This eliminates the need for a switch box or a second link to the host, and enables you to download directly from the host to UniSite. The host could be a networked file server such as a VAX or a Sun. When setup properly, the terminal connected to UniSite can control both UniSite and the remote host.

**Figure 2-4**  
*Transparent Mode*



095-0993-001

In Transparent mode, UniSite passes all characters through its Terminal and Remote ports as if they weren't there. The two serial ports on UniSite can even operate at different baud rates. While operating UniSite from the terminal, press **[Esc] [Ctrl] + [T]** to toggle UniSite between terminal mode and transparent mode. UniSite remains in transparent mode until it receives another **[Esc] [Ctrl] + [T]** command, at which time it switches back to terminal mode.

### What You Need

To connect UniSite to a host, you need the following:

- A free RS-232C serial port on the host.
- A 25-pin serial cable. If you need more information about which type of cable will work with UniSite, or if you need to build your own cable, see the section later in this chapter titled "More About Cables."

### Making the Connections

To connect UniSite to a host, follow the steps below.

1. Connect one end of the RS-232C serial cable to the serial port connector on the host.

On Sun workstations the serial ports are usually labeled Serial Port A, Serial Port B, etc. Other brands of workstations may label serial ports differently. Consult the documentation that came with the workstation for more information.

---

**CAUTION:** *To minimize electromagnetic interference, use only properly shielded and terminated cable.*

2. Connect the other end of the serial cable to the Terminal port on the back of UniSite.

### Checking the Communication Parameters

With UniSite connected to the host, adjust the communication parameters of the serial port connected to UniSite as follows:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit
- Full duplex
- CTS/DTR handshaking

---

*Note: CTS/DTR (Hardware Handshake) is enabled as the default; however, if those signals aren't connected, UniSite will sense this and still communicate properly using XON/XOFF (Software Handshake). UniSite always uses XON/XOFF regardless of whether CTS/DTR handshake is enabled.*

Later, once you have established communication and UniSite is operating, you can change the communication parameters to suit your needs. Consult the operator's manual supplied with the host if you need to change the host's communication parameters.

### About Baud Rates

If you can match all the default communication parameters except for the baud rate, don't worry. Later, after you have powered up UniSite, you can use UniSite's AutoBaud feature to match the baud rates between UniSite and the host. AutoBaud is explained later in this chapter. For now, set the baud rate on the host as close to 9600 as you can.

### The Next Step

UniSite is now connected to your host. Skip to the section titled "5. Insert the Algorithm and System Disks" to continue with the setup and installation of UniSite.

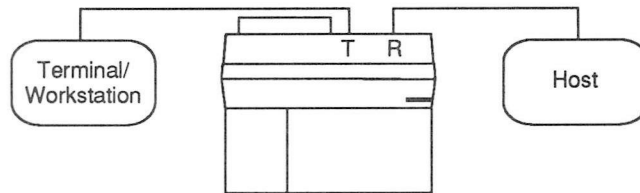
## Connecting to a Terminal

Connecting UniSite to a terminal is the simplest configuration. By connecting UniSite to a terminal, you can take advantage of all UniSite's capabilities, except for transferring data files between the terminal and UniSite.

### Transparent Mode

Transparent mode, shown in Figure 2-5, is a feature of UniSite that allows the programmer to be inline between your terminal and host computer. This eliminates the need for a switch box or a second link to the host, and enables you to download data files directly from the host to UniSite. The host could be a networked file server such as a VAX or a Sun. When setup properly, the terminal connected to UniSite can control both UniSite and the remote host.

*Figure 2-5  
Transparent Mode*



095-0993-001

In Transparent mode, UniSite passes all characters through its Terminal and Remote ports as if it weren't there. The two serial ports on UniSite can even operate at different baud rates. While operating UniSite from the terminal, press **[Esc] [Ctrl] + [T]** to toggle UniSite between terminal mode and transparent mode. UniSite remains in transparent mode until it receives another **[Esc] [Ctrl] + [T]** command, at which time it switches back to terminal mode.

### What You Will Need

To connect UniSite to a terminal, you need the following:

- A free RS-232C serial port on the terminal
- 25-pin serial cable. If you need more information about which type of cable will work with UniSite, or if you need to build your own cable, see the section later in this chapter titled "More About Cables."

If you are going to operate UniSite in transparent mode, you will also need the following:

- A free RS-232C serial port on the host. The host can be a VAX, a Sun, etc.
- 25-pin serial cable

## Approved Terminals

Before you connect your terminal to UniSite, make sure your terminal is compatible with UniSite. If your terminal type is listed below, then your terminal is compatible with UniSite.

- ANSI 3.64 compatible terminals
- DEC VT-100 compatible terminals
- Qume QVT-101 compatible terminals
- TELEVIDEO TVI-910 compatible terminals
- Wyse WY-30 compatible terminals

If your terminal is not included in the above list, check the documentation that came with your terminal to see if the terminal can emulate one of the terminal types listed above.

If your terminal has programmable function keys, the following table lists the expected codes for the four function keys:

VT-100 Key	Expected Code	Wyse-30 Key	Expected Code
PF1	ESC O P	F1	SOH @ CR
PF2	ESC O Q	F2	SOH A CR
PF3	ESC O R	F3	SOH B CR
PF4	ESC O S	F4	SOH C CR

## Making the Connections

To connect UniSite to a terminal, follow the steps below.

1. Connect one end of an RS-232C serial cable to the serial port connector on the back of the terminal.

On some terminals the serial port might be labeled Modem; on others the serial port might be labeled EIA. Consult the documentation that came with the terminal for more information.

---

**CAUTION:** *To minimize electromagnetic interference, use only properly shielded and terminated cable.*

2. Connect the other end of the cable to the Terminal port on the back of UniSite.

If you will not be using transparent mode, skip to the section titled "Checking the Communication Parameters." Follow the steps below if you will be using transparent mode.

3. Connect one end of an RS-232C serial cable to the serial port connector on the host. If the host is not available locally, i.e., the host is a networked VAX, then connect the serial cable to the appropriate serial port.

---

**CAUTION:** *To minimize electromagnetic interference, use only properly shielded and terminated cable.*

4. Connect the other end of the cable to the Remote port on the back of UniSite.

### Checking the Communication Parameters

Adjust the communication parameters of the equipment connected to UniSite as follows:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit
- Full duplex
- CTS/DTR handshaking

---

*Note: CTS/DTR (Hardware Handshake) is enabled as the default; however, if those signals aren't connected, UniSite will sense this and still communicate properly using XON/XOFF (Software Handshake). UniSite always uses XON/XOFF regardless of whether CTS/DTR handshake is enabled.*

Once you have established communication and UniSite is operating, you can change the communication parameters to suit your needs. Consult the manual supplied with the terminal if you need to change the terminal's communication parameters.

If you are using transparent mode, set the communication parameters on the serial port on the host as described above. Later, when you have powered up UniSite, you can change the parameters on UniSite's Remote port to match the communication parameters of the host.

UniSite is now connected to your terminal. Skip to the section titled "5. Insert the Algorithm and System Disks."

### More About Cables

You will need one 25-pin RS-232C serial cable for each piece of equipment you will connect to UniSite.

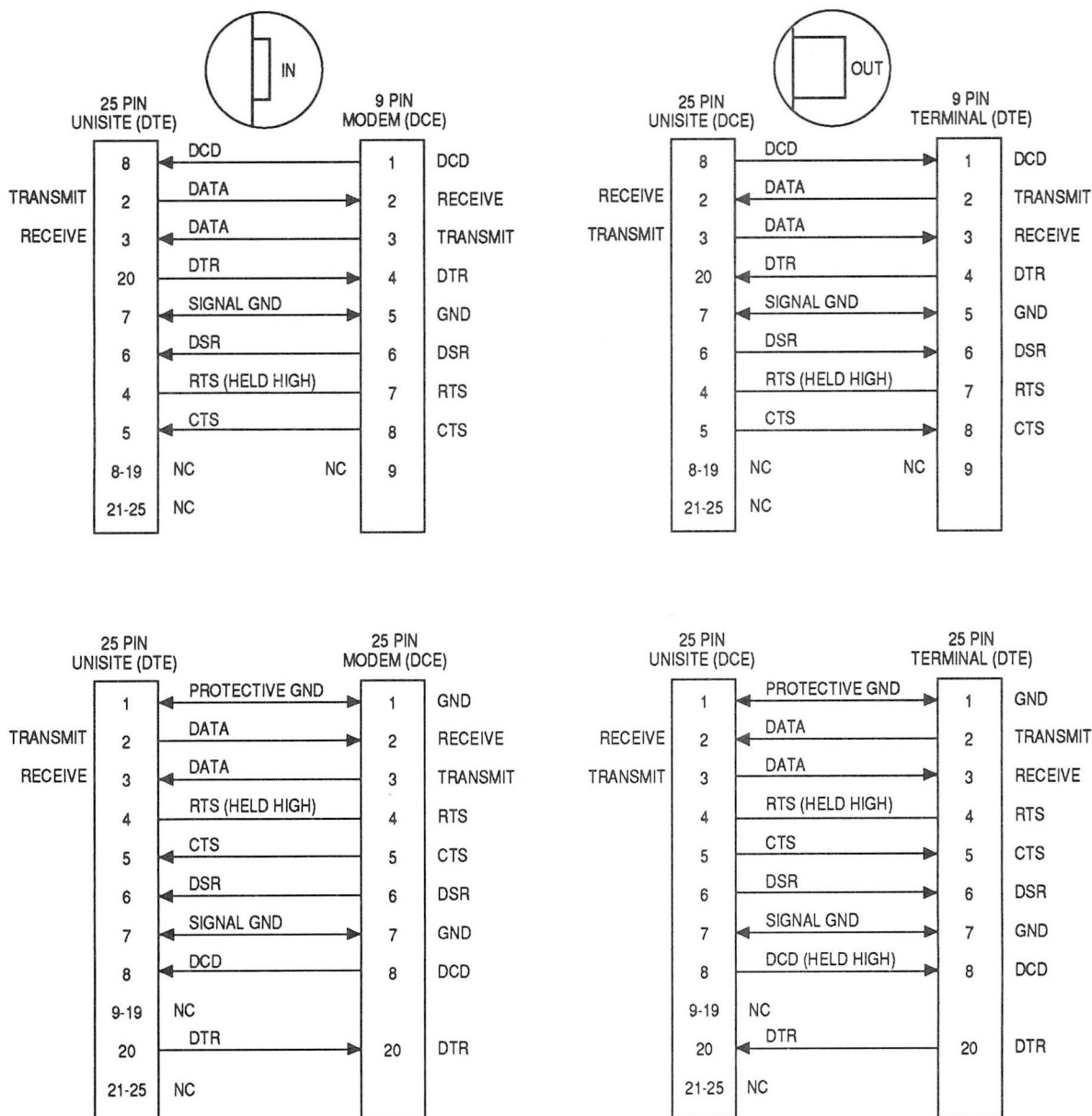
Normally, when you connect equipment to a programmer, you must match Data Terminal Equipment (DTE) to Data Communications Equipment (DCE) and DCE to DTE.

If you don't know what type of equipment you have, don't worry: UniSite is compatible with both types. For now, just connect the cables. If you don't have 25-pin serial cables, or if you are not sure if they will work, you can use the cabling diagrams below to build your own cable.

## Making Your Own Cable

UniSite receives commands and sends responses through an RS-232C port using a 25-pin connector in two possible configurations: either DTE or DCE. The connections are shown in Figure 2-6.

**Figure 2-6**  
*Pin Designations for RS-232C  
Serial Port Connection*



The minimum hookup includes Pins 2, 3, and 7.  
Pins 1 and 7 are tied together.

095-0362-003

## Switching Modes

As shown in Figure 2-6, the switches on UniSite's back panel toggle each port between DTE and DCE. For now, do not change the settings of the switches. For information when to use the DTE/DCE switches, see the section titled "5. Insert the Algorithm and System Disks."

**Pin Functions When In DTE Mode**

The following table explains the function of the pin on the Terminal and Remote ports when connected to DTE equipment.

Pin	Function	Description
1	Ground	Provides a safety ground connection.
2	Transmit Data	Carries the transmitted data.
3	Receive Data	Carries the received data.
4	Request to Send	This line is held high by UniSite.
5*	Clear to Send	A high on this line will enable UniSite to transmit data. (Used for hardware handshaking.) A low will inhibit data transmission from UniSite.
6*	Data Set Ready	This line is held high when the remote source is ready to send or receive data. A low will inhibit data transmission from UniSite.
7	Signal Ground	Provides a reference ground for all signals on the cable.
8*	Data Carrier Detect	This line is held high when the modem detects a carrier. A low on this line inhibits UniSite from transmitting data.
9-19	No Connection	
20	Data Terminal Ready	This line is pulled high by UniSite to indicate it is ready to receive data. This line is pulled low to signal the remote computer to stop sending data. (Used for hardware handshaking.)
21-25	No Connection	

\* If these lines are not connected, UniSite will consider them high and will function normally.

**Pin Functions When In DCE Mode**

The following table explains the function of the pin on the Terminal and Remote ports when connected to DCE equipment.

Pin	Signal	Description
1	Ground	Provides a safety ground connection.
2	Receive Data	Carries the received data from the DTE device to UniSite.
3	Transmit Data	Carries the transmitted data from UniSite to the DTE device.
4	Request to Send	This line is held high by UniSite.
5	Clear to Send	A high on this line from UniSite means that it is ready to receive data. (Used for hardware handshaking.)
6	Data Set Ready	This line is held high when UniSite is ready to transfer data.
7	Signal Ground	Provides a reference ground for all signals on the cable.
8	Data Carrier	This line is held high by UniSite.
9-19	No Connection	
20*	Data Terminal	A high on this line will enable UniSite to transmit data. (Used for hardware handshaking.) A low will inhibit data transmission from UniSite.
21-25	No Connection	

\* If these lines are not connected, UniSite will consider them high and will function normally.



## 5. Insert the Algorithm and System Disks

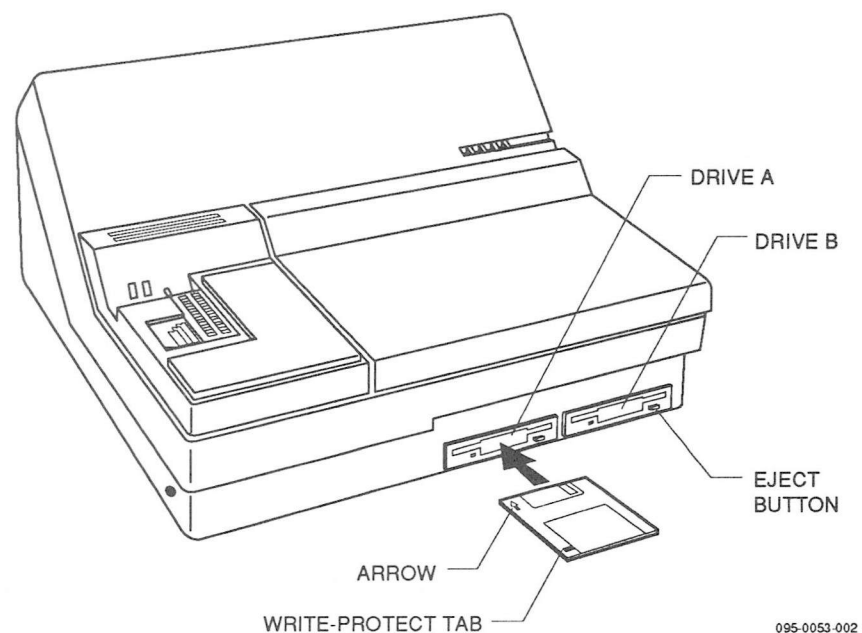
Follow the steps below to insert the Algorithm and System disks into UniSite.

1. Open the software package and remove the Algorithm and System disks. Fill out and return the End User Registration Card located in this manual. After registering with Data I/O, you will receive information about all future updates and product upgrades.

*Note: Please fill out and return the End User Registration Card so we can keep you informed of product updates.*

2. Make sure the write-protect indicator is covering the write-protect hole on both the Algorithm disk and the System disk. Insert the System disk into drive A, making sure the arrow molded into the plastic case is on the top of the disk and is pointing toward UniSite. Push the disk straight into the drive until the disk drops down and the eject button pops out.

**Figure 2-7**  
Inserting the System Disk



3. Insert the Algorithm disk into drive B (the drive on the right).

### About the System and Algorithm Disks

The System disk contains UniSite's operating system. The Algorithm disk contains all the programming algorithms for the devices currently supported by UniSite. The Algorithm disk must be installed each time you select a device. If you have a single-drive UniSite, a message will appear, telling you when to insert the Algorithm disk.

If you have a two-drive UniSite, we suggest you keep the System disk in drive A and the Algorithm disk in drive B.

---

*Note: Do not attempt to use an Algorithm disk or System disk with more than one UniSite. Each disk is configured to work with only one particular UniSite. Once you get UniSite working, make a backup copy of the Algorithm and System disks.*

### Software Version Compatibility

The UniSite System and Algorithm disks contain separate version numbers for their contents. UniSite checks the version numbers of the two disks and informs you if the two disks are not compatible with each other. The version numbers of the two disks do not have to be identical for the two disks to work together. A System disk and an Algorithm disk are compatible if they meet the following rules:

1. All digits to the left of the decimal point are the same.
2. The first digit to the right of the decimal point is the same. (Any additional digits, if present, do not have to match.)

For example:

System Version	Algorithm Version	Compatible?
2.50	2.50	Yes
2.51	2.50	Yes
2.50	2.51	Yes
2.50	2.40	No

This version control system allows the Algorithm disk to be updated without requiring a new System disk.

---

## 6. Power Up UniSite

To power up UniSite, follow the steps below.

1. Make sure UniSite is positioned so the fan on the bottom will not be obstructed. Also, check that there is no paper or other material blocking the fan.
2. If you will be using an antistatic wrist strap, put on the wrist strap and connect the wrist strap to UniSite. The ground connector for the antistatic wrist strap is on the left side of UniSite. Refer to Figure 1-2 for the location of the ground connector on UniSite.

---

**WARNING:** To avoid electric shock, the antistatic wrist strap must contain a 1M $\Omega$  (minimum) to 10M $\Omega$  (maximum) isolating resistor.

### Connecting the Power Cord

Connect one end of the ac line cord to the ac receptacle on UniSite's rear panel and the other end to a properly grounded ac outlet.

---

**WARNING:** To ensure proper grounding, and to avoid hazard of electrical shock, connect UniSite **ONLY** to a properly grounded ac outlet.

Make sure that a module is installed in UniSite. Also, make sure the device socket(s) in the module is empty.

---

**CAUTION:** *Leaving a device in the socket during power-up could damage the device.*

Power up the PC, workstation, or terminal. If you will be controlling UniSite from a PC or workstation, make sure that the terminal emulation software (such as HiTerm) is running. If you will be controlling UniSite from a terminal, make sure that the terminal is in the proper emulation mode (such as VT-100 mode). See the "Approved Terminals" section earlier in this chapter for more information.

### Powering Up

Power up UniSite. The power switch is located on the back panel. When you turn the power switch on, the Power LED should light. If it doesn't, turn UniSite off, check the power connections, and turn UniSite on again. If the LED still does not light, check the line fuse and voltage selector. See the end of this chapter for more information.

---

*Note: Do not remove the Algorithm disk or the System disk while either the Self Test or disk drive LED is lit. If you remove either disk during power-up, you will need to reboot UniSite.*

**Did UniSite Pass Self-test?**

While powering up, UniSite performs a power-up self-test. UniSite has completed power up when the Self Test LED and disk drive LEDs are off. If the Self Test LED does go off, then go to the section titled "Are the Right LEDs Lit?"

If the power-up self-test detected anything wrong, the four LEDs illuminate in different patterns, telling you what the self-test found. In general, if one or more front panel indicators is blinking after the self-test, there may be a faulty circuit board in UniSite. Contact Data I/O Customer Support for more information. The different combinations of blinking LEDs are explained below.

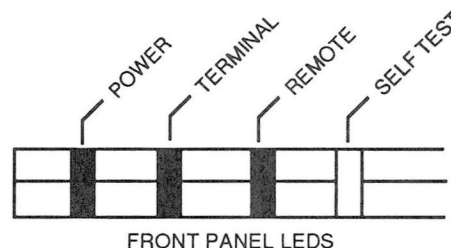
-----Indicator-----				
Power	Terminal	Remote	Self-Test	Description
Off	X	X	X	Bad power supply
On	Blinking	Off	On	Bad CPU, EPROM
On	Off	Blinking	On	Bad system RAM
On	Blinking	Blinking	On	Bad serial port DUART
On	Off	Off	On	Performing self-test

Note: X = don't care condition.

**Are the Right LEDs Lit?**

If UniSite completed the self-test successfully, the Power LED will be lit. Also, if you have equipment connected to the Terminal and Remote ports, the corresponding LEDs should be lit. Figure 2-8 shows the location of the front panel indicators.

Figure 2-8  
Front Panel Indicators



095-0361-002

If all the right LEDs are lit, then go to the section titled "Is the Power-On Screen Displayed?"

If the Remote LED and/or Terminal LED should be lit and they are not, continue with the next section, "Configuring the Ports."

**Configuring the Ports**

Before communication between UniSite and a device connected to one of UniSite's serial ports can be established, three requirements must be met:

- UniSite's port must be configured using the DCE/DTE button so that it is compatible with the equipment it is connected to.
- UniSite's serial I/O parameters must match those of the equipment it is connected to.
- UniSite must recognize the type of terminal that you are using. (Selecting the correct terminal type is described in the next section, "7. The Power-On Screen.")

The steps below tell you how to configure the Terminal port. Use the same procedure for configuring the Remote port.

1. After you have powered up UniSite and the Self-Test indicator has gone out, look at the Terminal LED on the front panel.
2. If the LED is lit, UniSite's Terminal port is configured correctly. Skip to the section titled "Is the Power-On Screen Displayed?"
3. If the LED is not lit, press the button next to the Terminal port on the rear panel of UniSite once. (Remember, if you are configuring the Remote port, press the button next to the Remote port.) When the switch is pressed in, UniSite acts as Data Terminal Equipment (DTE); when in the out position UniSite acts as Data Communications Equipment (DCE).

After you press the button, the LED should light. If it does light, skip to the section titled "Is the Power-On Screen Displayed?"

If the LED does not light, continue with the section titled "Checking the Connections."

#### Checking the Connections

Sometimes problems are caused by unconnected cables. Turn UniSite off and check all of the following:

- Power cords — Are they all plugged into a live outlet and into the equipment?
- Cables — Is each cable between UniSite and a peripheral connected properly? Is each cable connected to the proper port?
- Terminal — Is the terminal plugged in and turned on? Are the display controls adjusted to allow viewing? Is the terminal an approved terminal type? (see the list of approved terminals for more information) Are the communication parameters set correctly? Is the cable connected to the proper port?
- Host — Is it plugged in and turned on? Is the terminal emulation software installed and configured properly? Is the terminal emulation software running properly? Are the display controls on the monitor adjusted to allow viewing?
- Algorithm and System disks — Are the disks inserted properly?
- Module — Is there a module inserted into UniSite? Is it inserted properly? Is it empty? (the module must be empty for UniSite to boot up properly)

Now, after checking everything described above, reboot UniSite. For information on rebooting UniSite see the next section, which is titled "Rebooting UniSite." When UniSite reboots, go back to the section titled "Powering Up."

**Rebooting UniSite**

If you need to reboot UniSite, you can do it in one of two ways. Either turn UniSite off, wait a few seconds, and then turn UniSite on again. Or, press **[Esc] [Ctrl] + [W]**. UniSite always performs a power-up self-test whether you do a warm boot (pressing **[Esc] [Ctrl] + [W]**) or a cold boot (cycling power).

**Is the Power-On Screen Displayed?**

If the Power-On screen is displayed you have successfully booted up UniSite. Go to the next step, "7. The Power-On Screen."

If you do not see the Power-On screen, or if you see random characters, UniSite is not communicating properly with your controlling terminal/workstation. One possible cause of the random characters is that the baud rates of UniSite and the controlling equipment do not match. In this case, follow the procedure in the next section to execute the AutoBaud function to "sync up" the baud rates.

**AutoBaud and Baud Rates**

When enabled, AutoBaud determines the baud rate of the equipment connected to UniSite's Terminal port and sets UniSite's baud rate to match.

---

*Note: AutoBaud is available only from the Power-On screen and works only on the port configured as the User Menu Port. The User Menu Port is the port UniSite sends the user interface data, such as screens and online help, through. When shipped from the factory, the Terminal port is configured as the User Menu Port. So, for "out of the box" setup, AutoBaud should work on the Terminal port.*

To execute AutoBaud, press **[Break]** and then **[A]**.

After executing AutoBaud, you should see the Power-On screen. If you see the Power-On screen, then you have successfully booted up UniSite. Go to the next step, "7. The Power-On Screen."

If you do not see the Power-On screen, then you should go back to the subsection titled "Checking the Connections."

**When to Use AutoBaud?**

Normally you can set the communication parameters on the controlling PC/workstation/terminal to match UniSite's baud rate. Use AutoBaud when you will not be able to set the controlling equipment's baud rate to match UniSite's baud rate. For instance, use AutoBaud to control UniSite with a terminal that is not capable of operating at 9600 baud. In this example, you would set the terminal's baud rate as close to 9600 as possible and then execute AutoBaud when UniSite boots up.

## 7. The Power-On Screen

The Power-On screen, shown in Figure 2-9, appears after UniSite completes its power-up self-test successfully. The Power-On screen lists the version and configuration information for UniSite and the current and default terminal types.

Figure 2-9  
Typical Power On Screen

```

#####
###  ###  ###  ###  ###  #####  ###  #####  #####
###  ###  #####  ###  ###  ##  ##  ###  #####  ###
###  ###  #####  ###  ###  ##  ###  ###  #####
###  ###  #####  ###  ###  ##  ###  ###  #####
###  ###  #####  ###  ###  ##  ###  ###  #####
###  ###  #####  ###  ###  ##  ###  ###  #####
###  ###  #####  ###  ###  ##  ###  ###  #####
#####  #####  #####  #####  #####  #####  #####

          DATA I/O UNIVERSAL PROGRAMMER
        (Copyright 1987-1992 Data I/O Corp.)

SYSTEM CONFIGURATION:
  User RAM: 128KB
  PSM: Site40 U01          FSM: none
  Mainframe pin drivers = 28 (4 pin drivers/board)
  Software revision     = Y.YY
  EPROM revision        = Z.Z
  Algorithm revision    = X.XX
  Current terminal type  = WYSE WY-30, TELEVIDED TVI-910
Do you want to select a new terminal type? (Y/N) [N]:

```

At this point, you are asked if you want to choose a new terminal type. If the current terminal type is correct, press ☐ and go to the section titled "What to Do Next Time."

*Note: If random characters or nothing appears on the screen after pressing Return, the terminal port configuration is incorrect. Restart the system by cycling power. Then, return to the section titled "Powering Up."*

To change the current terminal type and/or the default terminal type, refer to the appropriate section below, "Selecting a New Terminal Type" or "Changing the Default Terminal."

If you will be using the current configuration for a while, we suggest you change the default terminal type to match the terminal type you will be using to control UniSite. For information on changing the default terminal type, go to the section titled "Changing the Default Terminal."

### Selecting a New Terminal Type

The following steps describe how to change the current terminal type. The change in terminal type will remain in effect until you reboot UniSite or change the terminal type.

1. At the bottom of the Power-On screen, UniSite displays the following prompt:

```
Do you want to select a new terminal type? (Y/N) [N]:
```

Press ☐ ☐ to select a new terminal type.

2. UniSite then displays the default and current terminal types and a list of the available terminal types. To select a new terminal type, enter the number corresponding to that terminal type and press ☐.

---

*Note: If the screen is blank or if random characters appear after you press Enter, the Terminal type configuration is incorrect. Switch the power off and then power up UniSite. Then return to the beginning of this section and select the proper terminal type.*

If you do not see your terminal listed on the screen and do not know what terminal type(s) it can emulate, refer to the Compatible Terminals list shown previously in this chapter.

You have changed the terminal type for this current session. UniSite responds with the following prompt:

Save terminal type as power on default? (Y/N) [N]

3. Press ☐ ☐ to go to the Main Menu without changing the default terminal type.

When the Main Menu appears, UniSite is ready for operation. Go to the section titled "What to Do Next Time."

## Changing the Default Terminal

Follow the steps below to change the default terminal type.

1. At the bottom of the Power-On screen, UniSite displays the following prompt:

Do you want to select a new terminal type? (Y/N) [N]:

Press ☐ ☐ to select a new terminal type.

2. UniSite then displays the default and current terminal types and a list of the available terminal types. To select a new terminal type, enter the number corresponding to that terminal type and press ☐.

---

*Note: If the screen is blank or if random characters appear after you press Enter, the Terminal type configuration is incorrect. Switch the power off and then power up UniSite. Then return to the beginning of this section and select the proper terminal type.*

If you do not see your terminal listed on the screen and do not know what terminal type(s) it can be operated as, refer to the Compatible Terminals list shown previously in this chapter.

You have changed the terminal type for this current session. UniSite responds with the following prompt:

Save terminal type as power on default? (Y/N) [N]

3. Press ☐ ☐ to change the default terminal type. After UniSite saves the currently selected terminal type as the power-on default, the Main Menu appears, indicating that UniSite is ready for operation. Go to the section titled "Setting Up High Speed Download."



---

## Setting Up High Speed Download

This section explains how to setup UniSite so you can download files from UniSite at 115.2K baud.

To take advantage of High Speed Download, you must be controlling UniSite from a PC, the PC must be connected to UniSite's Remote port, and you must be using HiTerm as your terminal emulation software. See the section titled "Installing HiTerm" earlier in this chapter.

Skip to the section titled "What to Do Next Time" if you are not using HiTerm on a PC.

### Why Should I Use High Speed Download?

High Speed Download can reduce the transfer time for a large data file by as much as 92%.

As an example, downloading a formatted data file for a 1 Mb EPROM takes 6 minutes and 38 seconds at 9600 baud. With High Speed Download, it only takes 32 seconds to download the same data file from a 25MHz 386 PC.

---

*Note: To obtain the best results, we suggest you run HiTerm on a 286- or 386-based PC.*

### What Happens During High Speed Download?

When you begin a download to UniSite, UniSite and HiTerm communicate with each other to coordinate the transfer. HiTerm translates the data file on the PC into a special binary format. The compression of the data file reduces the size of the data file by up to 64%.

---

*Note: HiTerm compresses a temporary copy of the data file; your original data file is not changed.*

HiTerm then switches the baud rates on the PC and UniSite to 115.2K baud and downloads the data file to UniSite. After the download, the baud rates on the PC and UniSite are restored to their original values.

### Configuring the Remote Port

For High Speed Download to work, you must have your PC connected to UniSite's Remote port and UniSite must be configured to run from the Remote port. Follow the steps below to configure UniSite to run from the Remote port.

1. Start HiTerm. Power up UniSite. If UniSite is already powered up, reboot it by pressing **[Esc] [Ctrl] + [W]**. Complete booting up as normal.
2. From the Main Menu, press **[M] [C] [E] [S]** to get to the Serial Port Configuration screen.

3. The Mode: field for the Terminal port and the Remote port should match. If the two Mode: fields match, skip to step 4.

If the Mode: fields are different, toggle the DTE/DCE switch for the Remote port on UniSite's back panel. Figure 1-3 shows the location of the DTE/DCE switch for the Remote port. Go back to the beginning of this step after you have toggled the DTE/DCE switch on the Remote port.

4. From the Main Menu, press **[M][C][E][C]** to get to the Communication Parameters screen.
5. Move the cursor to the High Speed Download field. Press **[Y]** to enable High Speed Download. When you press **[Y]** UniSite sets the High Speed Download parameter to Y and displays the following message in the message bar:  
  
Hit return to switch user menu port, ^Z to abort  
  
UniSite also sets the User Menu Port parameter to R, which configures UniSite to send its user interface data to the Remote port.
6. Press **[J]**. You do not see any response on the screen.
7. Look at the back panel of UniSite. Remove the cable connecting UniSite and the PC from the Terminal port and connect the cable to the Remote port.  
  
When you switch the cable from the Terminal port to the Remote port, the Terminal LED should go out and the Remote LED should light. If the Remote LED does not light, power down UniSite, reconnect the PC cable to the Terminal port, and go back to step 1.
8. After you have connected the cable to the Remote port, press **[Ctrl] + [R]** to redisplay the Communication Parameters screen. If you cannot redisplay the Communication Parameters screen, power down UniSite, reconnect the PC cable to the Terminal port, and go back to step 1.
9. Press **[F1]** to display the Main Menu. If the Main Menu appears, continue with the next step. If you do not see the Main Menu, power down UniSite, reconnect the PC cable to the Terminal port, and go back to step 1.

High Speed Download is now enabled.

#### About the User Menu Port

In the previous procedure, you configured UniSite for High Speed Download. As part of the configuration, you switched the User Menu Port from the Terminal port to the Remote port. The User Menu Port is the port through which the user interface data for UniSite is sent. User interface data includes screens, menu information, and online help. When shipped from the factory, the Terminal port is the User Menu Port.

## Changing the Power-up Defaults

The previous procedure told you how to change the User Menu Port for the current session. The following procedure tells you how to make that change part of your default working environment on UniSite.

If you do not save the changes you made in the previous procedure, you can still use High Speed Download for the current session. But, the next time you power up UniSite, you will have to repeat the procedure to enable High Speed Download.

### About Power-up Defaults

As part of the power-up process, UniSite reads a configuration file that contains the settings to use for over 50 system parameters. Collectively, the settings of these parameters are known as the Power-up Defaults. By comparison, the Power-up Defaults are similar to the `autoexec.bat` and `config.sys` files on a PC.

The parameters that comprise the Power-up parameters are listed and described in Chapter 5, "Commands."

Follow the steps below to make High Speed Download part of your power-up defaults.

1. From the Main Menu, press **M** **C** **S** to display the Save System Parameters screen. UniSite displays up to ten configuration files.

If you want to save High Speed Download as part of your power-up defaults, press **1** **↓**. UniSite displays the following message in the message bar:

```
Parameter Entered
```

2. Press **↓** to save the current settings as the Power-up Defaults. The action symbol rotates while UniSite is saving the current parameter settings as the Power-up Defaults. When finished, UniSite displays the following message in the message bar:

```
System parameters saved
```

With High Speed Download saved as part of your Power Up Defaults, you will be able to use High Speed Download for the current session and for any future time you power up UniSite.

## Using High Speed Download

With UniSite properly configured for High Speed Download, you can use HiTerm to download files from the PC to UniSite at 115.2K baud.

For an example of downloading files to UniSite using High Speed Download, see Session 7 in Chapter 4.

---

## What to Do Next Time

Next time you power up UniSite, you probably do not need to follow all the steps outlined in this chapter. Listed below are the normal steps for preparing for another session on UniSite.

---

*Note: If you have not used UniSite for awhile, or if you suspect UniSite might have been moved from one area to another, follow the procedure below before you use UniSite.*

To prepare UniSite for another session, follow the procedure below:

1. Check the power cords and cables between UniSite and the connected equipment.
2. If you are controlling UniSite from a PC or workstation, make sure it is on and that the terminal emulation software (such as HiTerm) is running.

If you are controlling UniSite from a terminal, make sure it is on.

3. Insert the Algorithm and System disks into the disk drives.
4. Select and insert a module into UniSite. Make sure the module is locked in place.
5. Power up UniSite.
6. Verify the terminal type when the Power-On screen appears.

You are now ready to begin a new session on UniSite.

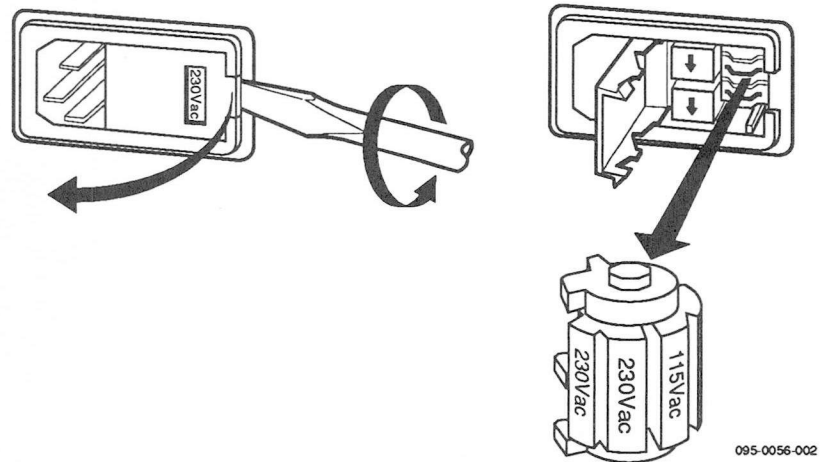
## Changing the Line Voltage

Data I/O has configured your UniSite to operate on 115 Vac unless specified otherwise. The line voltage indicator is visible through the window in the back panel door that covers the voltage selector wheel, which is shown in Figure 2-10. The ac line voltage that will be used to operate UniSite must match the number indicated in the window. If the voltage you need to use is NOT the same as the number in the window, follow the steps below to change the selected voltage.

**CAUTION:** *You could damage UniSite if you operate it with the wrong line voltage.*

1. Disconnect the power cord.
2. Using a flat-tipped screwdriver, gently pry open the door that covers the voltage selector wheel.

**Figure 2-10**  
Removing the Voltage Selector Wheel

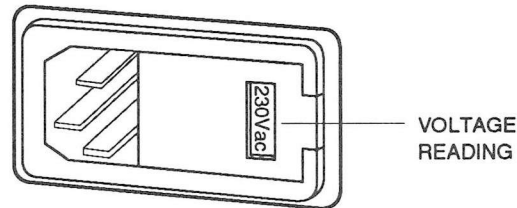


3. As shown in Figure 2-10, pull the voltage selector wheel out of its slot.
4. Rotate the selector until the correct line voltage points away from UniSite's rear panel. Insert the selector back into its slot.

**Note:** *The voltage wheel has two positions: 115 Vac and 230 Vac. These are nominal voltages -- each voltage has high and low limits. The limits for 115 Vac is 90 Vac to 132 Vac and the limits for the 230 Vac position are 180 Vac to 264 Vac.*

5. Snap the door closed.
6. The correct voltage now appears in the window.
7. Verify that the line voltage is correct by checking the line voltage indicator. Figure 2-11 shows the location of the voltage indicator.

**Figure 2-11**  
Voltage Reading



095-0057-002

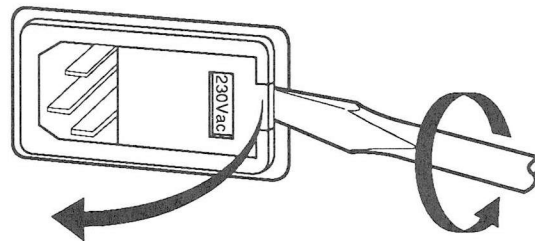
---

## Replacing the Line Fuse

The line fuse is located behind the same door that covers the voltage selector wheel. Perform the following procedure to replace the line fuse. If the fuse is blown, replace it with one of the same size and rating.

1. Gently pry open the door that covers the fuse holder using a flat-tipped screwdriver.

**Figure 2-12**  
Opening the Fuse Holder



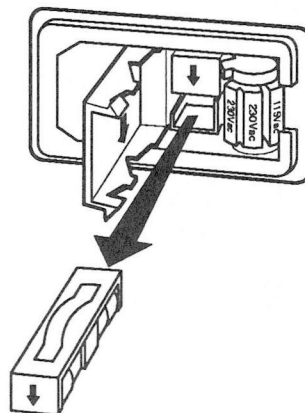
095-0058-002

---

*Note:* The power entry module will accept two fuse cartridges. One cartridge holds USA standard size fuses (1/4" x 1 1/4") and the other holds international standard size fuses (5 mm x 20 mm). Only the bottom receptacle is connected to UniSite's circuitry.

2. Pull the bottom fuse holder out of its slot.

**Figure 2-13**  
*Removing the Fuse Holder*



095-0059-002

3. Determine whether the fuse is intact. If it is intact, proceed to Step 4. If the fuse is blown, install a new fuse.

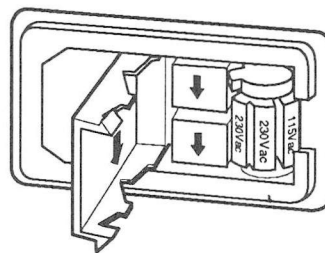
---

**CAUTION:** *For continued protection against the possibility of fire, replace only with a fuse of the correct voltage, current and type ratings.*

---

4. Insert the fuse holder into its slot so that the arrow points in the same direction as the arrows on the door of the fuse holder.
5. Snap the door closed.

**Figure 2-14**  
*Inserting the Fuse Holder*



095-0060-002

# 3 Quick Start

---

This chapter will help you begin operating UniSite. The list below shows you some of the major topics covered in this chapter.

- The UniSite Screen
- Controlling the Cursor
- Selecting and Executing a Command
- Getting Online Help
- Using Key Functions

---

## Before You Begin

Before you go any further in this chapter, make sure you have completed the setup and installation instructions in the previous chapter. You should also have read Chapter 1, "Introduction."

UniSite should be powered up and you should be looking at the Main Menu, shown in Figure 3-1.

**Figure 3-1**  
*The Main Menu*

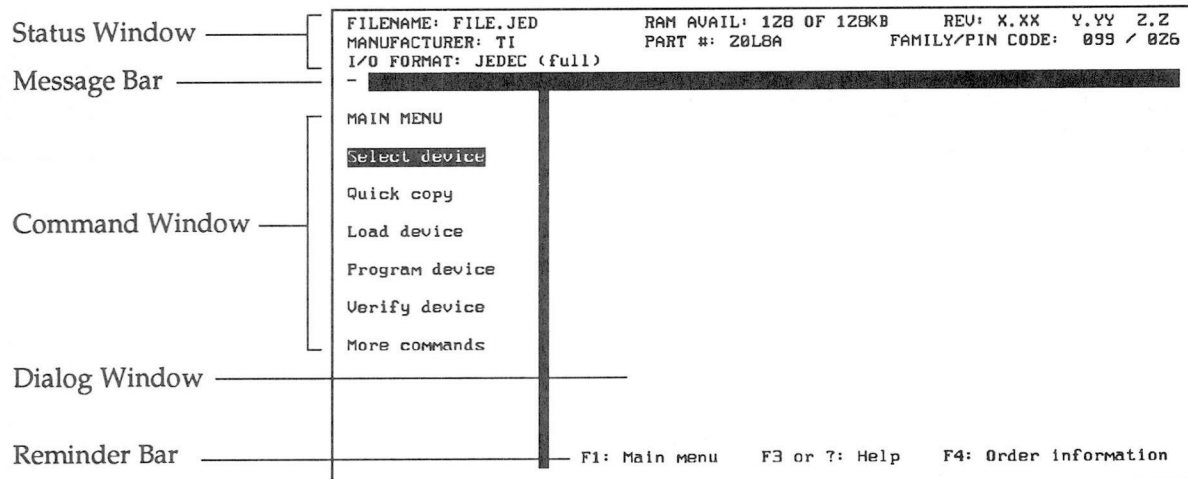
FILENAME:	RAM AVAIL: 128 OF 128KB	REV: X.XX Y.YY Z.Z
MANUFACTURER:	PART #:	FAMILY/PIN CODE: 000 / 000
I/O FORMAT:		
-		
MAIN MENU		
Select device		
Quick copy		
Load device		
Program device		
Verify device		
More commands		
F1: Main Menu F3 or ?: Help F4: Order information		



## The UniSite Screen

You will see a consistent format to the screens as you use UniSite. Most screens, such as the screen shown in Figure 3-2, are broken into five areas: the status window, the message bar, the command window, the dialog window, and the reminder bar.

*Figure 3-2*  
*Areas of the UniSite Screen*



### Status Window

Occupying the top three lines of the screen, the status window displays important system information. The following are included in the status window:

- Name of the data file (FILE.JED in Figure 3-2)
- Amount of user RAM (128 of 128KB)
- Version numbers of the algorithm disk (X.XX), the system disk (Y.YY), and the system EPROM (Z.Z).
- Device manufacturer (TI) and part number (20L8A)
- Family code (099) and pinout code (026)
- Data translation format (JEDEC full)

### Message Bar

Located just below the status window, the message bar displays system and error messages. The action symbol is also located in the message bar. The action symbol rotates while an operation is taking place, indicating that UniSite is busy.

### Command Window

Occupying the left side of the screen is the command window. At the top of the window is the menu name, displayed in uppercase letters. Below the menu name, the available commands are displayed in upper- and lowercase letters.

**Dialog Window**

Occupying the largest window on the screen, the dialog window displays different information and system parameters, depending on the selected command.

**Reminder Bar**

Located at the bottom of the dialog window, the reminder bar tells you what function keys are available and what they will do if pressed.

---

## Moving the Cursor

Pressing the arrow keys moves the cursor in the direction indicated on the key. The cursor will wrap around when it has reached the edge (top, bottom, left, right) of a window.

---

## Selecting a Command

You can select a command using one of two methods: you can either press the first letter of the command, or move the cursor to the menu item and press ☐.

---

## Accessing Online Help

Online Help screens are available throughout UniSite and provide both general help and context-sensitive help. Context-sensitive help gives you help text that is specific to a particular field on the screen. For example, if you are on a parameter selection screen, each parameter on the screen has a different piece of help text associated with it.

### Getting Help

To access help, move the cursor to the item you want help on and press either **F3** or **?**. The Help screen is divided into four sections: the key listing, the general help, the specific help, and the reminder bar.

See Figure 3-3 for a sample help screen.

### Key Listing

Displayed at the top of the help screen, the key listing provides a quick summary of some of the most often used key commands. Key combinations displayed with a dash between them, such as

CTRL-P

indicate you should press and hold the first key; then press the second key. Key combinations displayed with a space between them, such as

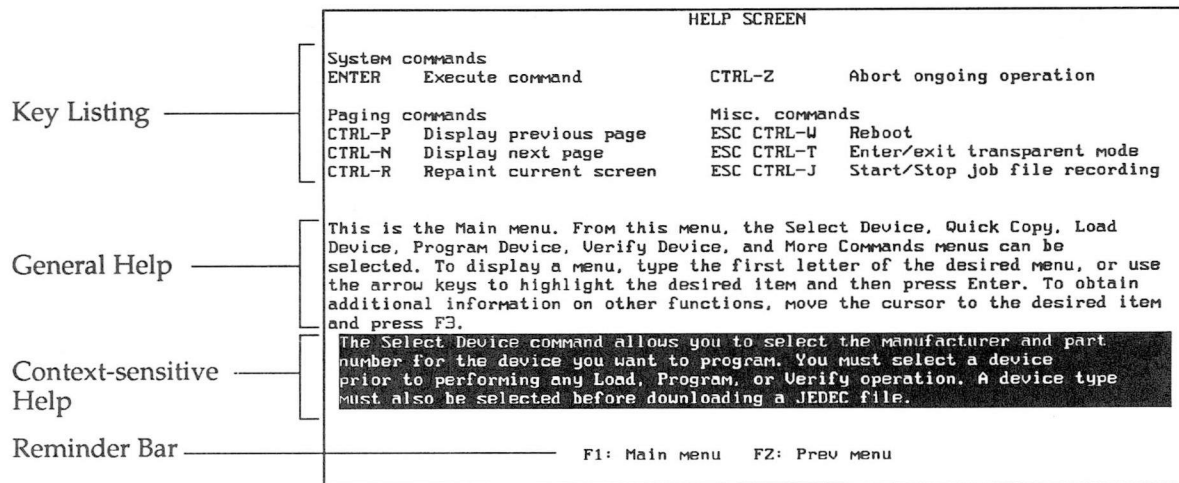
ESC CTRL-T

indicate you should press and release the first key, then press the key combination.

### General Help

Displayed in the middle of the screen, the general help text tells you about the next higher command or menu. Although the general help is not as specific as the context-sensitive help, it provides you with a good reference point.

Figure 3-3  
Areas of the Help Screen



#### Context-sensitive Help

Displayed in reverse video, the context-sensitive help provides you with information about the specific item the cursor was on when you called the help function. The information in this field changes every time you move the cursor to a different location on the screen.

#### Reminder Bar

Displayed on the bottom line of the screen, the reminder bar shows which function keys you can use to exit Help.

### Accessing Online Help for System Messages

Online help is available for non-fatal system messages, which result from situations that do not interrupt UniSite's operation. Fatal messages, which result from situations that do interrupt UniSite's operation, are listed and described in Chapter 8, "Messages."

Non-fatal error messages are generally displayed in the message bar. To access the online help for the message, press **F3** or **?**. UniSite displays the online help for the message. Exit the message help screen as you would any help screen.

### Accessing Device-Specific Online Information

After selecting a device, you will see the following message in the message bar if there is online device-specific information for the selected device.

Hit F3 or ? to view device specific message.

Press **F3** or **?** to display the device-specific information. If there is more than one screen of device-specific information, press **Ctrl** + **N** to view the next screen of information. Exit the screen as you would any help screen.

## Exiting Help

To exit any Help screen, press either **F1** or **F2**. **F1** returns you to the Main Menu and **F2** displays the previous screen from which the Help function was invoked.

## Using Key Functions

Some of UniSite's functions may be performed by pressing a key or a combination of keys. When using the **Ctrl** key, hold it down and then momentarily press the second key. The key functions are listed below with their corresponding keystroke sequence.

Keystrokes	Description
<b>F1</b>	Return to the Main Menu
<b>F2</b>	Go to the previous menu
<b>F3</b> or <b>?</b>	Display online help for the current menu and cursor position
<b>F4</b>	Display the Optional Parameters screen
<b>↵</b>	Execute highlighted command
<b>Space</b>	Toggle a parameter
<b>Ctrl</b> + <b>N</b>	Display next page
<b>Ctrl</b> + <b>P</b>	Display previous page
<b>Ctrl</b> + <b>R</b>	Repaint screen
<b>Ctrl</b> + <b>Z</b>	Halt current operation
<b>Esc</b> <b>Ctrl</b> + <b>T</b>	Enter/exit transparent mode with host computer
<b>Esc</b> <b>Ctrl</b> + <b>J</b>	Start/stop job file recording
<b>Esc</b> <b>Ctrl</b> + <b>W</b>	Restart UniSite (warm boot)
<b>Break</b> <b>A</b>	Execute AutoBaud



# 4 *Tutorial*

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## Before You Begin

Before you start the Sessions in this chapter, read Chapter 1, "Introduction," which introduces you to UniSite. Next, read Chapter 2, "Setup and Installation," which tells you how to set up UniSite and install the software.

Finally, read Chapter 3, "Quick Start," which gives you a quick tour of UniSite and introduces you to UniSite's interface. Make sure UniSite is connected properly and is working before you start the Sessions.

---

## Should I Read This Chapter?

You should read and follow the Sessions in this chapter if you are unfamiliar with UniSite Universal Programmer or if you are unfamiliar with device programmers in general. By following the Sessions, you will learn how to select a device, load device data, edit data, program the device, and verify that it programmed correctly.

The Sessions will not teach you everything about UniSite; instead, they will give you a working knowledge of UniSite. Chapter 5, "Commands," contains detailed information about the features and capabilities of UniSite. Refer to Chapter 5 when you want more information about a particular command or procedure.

---

## What Will I Learn?

The Sessions are meant to be read sequentially. The most basic steps are taught first and lead to more complex procedures. The Sessions are organized as follows:

Session 1: Navigating Through the Menus

Session 2: Selecting a Device

Session 3: Selecting a Keep Current Algorithm

Session 4: Loading Data from a Device

Session 5: Loading Data from Disk

Session 6: Selecting a Translation Format

Session 7: Loading Data from a PC Using HiTerm

Session 8: Loading Data from a Host

Session 9: Editing Data

Session 10: Programming a Memory Device

Session 11: Verifying a Device

Summaries at the end of each Session remind you of the commands and procedures you are learning.

---

## Review of Programming Concepts

### Select Device

Before attempting most operations, you must first tell UniSite what device you will be working with. UniSite then selects the appropriate programming algorithm based on the manufacturer and device part number selected. Once you have selected a device, you can move on to other device operations, such as loading, programming, and verifying.

### Load Data

Load operations determine how you move device data into UniSite. You can load data from a device, from one of UniSite's internal disk drives, or from one of the two serial ports on UniSite (for example, from the Remote port).

### Program Device

Programming transfers the device data into the device inserted in UniSite. The programming is done according to the programming algorithm selected by the Select Device command. The programming operation also includes a Verify Operation, which is described below.

### Verify Device

A verify operation compares the data in a programmed device against the data in UniSite's RAM or against the data in a disk file. In the case of logic devices, verifying can also include functional testing. Verify is normally an automatic part of the program operation, but additional verify operations can provide useful information about many programming errors.

## Session 1: Navigating Through the Menus

This Session describes the organization of UniSite's menus and gives you an opportunity to explore the menu tree and the online help.

### Select a Menu Item

First, let's go over how you select an entry from the command window. (Remember, the command window is on the left side of the vertical bar.)

To select a command, either move the cursor to the menu item and press  or press the first letter of the menu item.

For example, if you want to test your UniSite, select the Self-test command on the More Commands menu. To access the More Commands menu, move the cursor to the More Commands menu item and press . Or, as mentioned above, simply press **M**.

The More Commands menu should appear. It should look like the screen shown in Figure 4-1.

**Figure 4-1**  
*The More Commands Menu Screen*

FILENAME:	RAM AVAIL: 128 OF 128KB	REV: X.XX	Y.YY	Z.Z
MANUFACTURER:	PART #:	FAMILY/PIN CODE: 000 / 000		
I/O FORMAT:				
MORE COMMANDS				
<b>Configure system</b>				
Device checks				
Edit data				
File operations				
Job file				
Remote control				
Self-test				
Transfer data				
Yield tally				
F1: Main menu		F2: Prev menu		F3 or ?: Help

If a different menu appears, don't worry. Press **F1** and try again.

Scan the menu, which is arranged alphabetically, and find the Self-test menu item. To access the Self-test, press  to move the cursor to the Self-test menu item and then press  to execute the command. (Remember, you could also have pressed the first letter of the menu item to select that command. In this case, you would press **S**.)

The dialog window should fill with the Self-test screen and the top of the window should read

SYSTEM DIAGNOSTIC TESTS



You have reached the Self-test screen, which is shown in Figure 4-2.

**Figure 4-2**  
The Self-test Screen

FILENAME:	RAM AVAIL: 128 OF 128KB	REV: X.XX	Y.YY	Z.Z
MANUFACTURER:	PART #:	FAMILY/PIN CODE: 000 / 000		
I/O FORMAT:				
-				
MORE COMMANDS	SYSTEM DIAGNOSTIC TESTS			
Configure system	Waveform board	PASS	Pin Control Unit	PASS
Device checks	EPROM	PASS	Serial ports	PASS
Edit data	System RAM	PASS	User RAM	PASS
File operations	Disk A	PASS	Disk B	PASS
Job file			PSM	PASS
Remote control			FSM	----
Self-test	Pin Driver board number	5	10	15
Transfer data		PPPPP	PP----	----
Yield tally				
	[P]Pass [F]Fail [?]Untested [-]Not installed			
	Perform All Tests		Test mode ONE PASS	
	Return: Execute			
	F1: Main menu	F2: Prev menu	F3 or ? : Help	

## Select Online Help

To access the context-sensitive, online help for the item the cursor is highlighting, press either **F3** or **?**. The entire screen clears and fills with the Help screen. The top third of the Help screen is a list of commonly used keys, the next third is general help, and the last third is the context-sensitive help.

**Figure 4-3**  
Areas of the Help Screen

HELP SCREEN	
System commands	ENTER Execute command CTRL-Z Abort ongoing operation
Paging commands	Misc. commands
CTRL-P Display previous page	ESC CTRL-W Reboot
CTRL-N Display next page	ESC CTRL-T Enter/exit transparent mode
CTRL-R Repaint current screen	ESC CTRL-J Start/Stop job file recording
General Help	This is the Main menu. From this menu, the Select Device, Quick Copy, Load Device, Program Device, Verify Device, and More Commands menus can be selected. To display a menu, type the first letter of the desired menu, or use the arrow keys to highlight the desired item and then press Enter. To obtain additional information on other functions, move the cursor to the desired item and press F3.
Context-sensitive Help	The Select Device command allows you to select the manufacturer and part number for the device you want to program. You must select a device prior to performing any Load, Program, or Verify operation. A device type must also be selected before downloading a JEDEC file.
Reminder Bar	F1: Main menu F2: Prev menu

## Context-sensitive Help

Context-sensitive help means that the text displayed on the screen changes every time you move the cursor to a different field. If the cursor is in the Disk field you get information on the Disk; if the cursor is in the RAM field, you get information on the RAM.

To leave the help screen and return to the Self-test screen, press **F2**. (Remember, if you forget what key to press, look at the reminder bar on the bottom of the screen for a quick reminder.) You should now be looking at the Self-test screen.

To illustrate that the context-sensitive help changes every time you change the cursor position, get help for two different fields on the Self-test screen. For example, move the cursor to the RAM field and access online help. (Remember, press **F3** or **?** to get help and **F2** to exit the help screen.)

Next, move the cursor to the Disk field and access the online help. (Remember, press **F3** or **?**.)

Notice that the context-sensitive help (the text in reverse video on the lower third of the screen) changed. The general help (the text in normal video on the middle third of the screen) didn't change because you are still on the Self-test screen. The general help changes when you move to another menu level. For example, leaving the Self-test screen and returning to the More Commands menu causes the general help to change.

To change the general help, press **F2** until the flashing cursor returns to the command window. Then access the online help. Notice that the general help has changed.

## Exit the Online Help

In the previous section, you pressed **F2** to return to the Self-test screen from the help screen. Pressing **F2** takes you one step closer to the Main Menu.

If you had wanted to return to the Main Menu quickly, you could have pressed **F1** instead.

Let's try it. If you are not already at the Main Menu, press **F1** to return to the Main Menu. Press **M** and then **S** to access the Self-test screen. From here, you can either press **F2** twice to return to the Main Menu, or you can press **F1** once to return to the Main Menu. Step through the menus until you are comfortable. (Access the online help if you want to.)

When finished, return to the Main Menu.

This completes your tour of UniSite's user interface and online help system.

## Review

In this Session you learned how to navigate through the UniSite interface.

Select menu items by either pressing the first letter of the command or moving the cursor to the command and pressing **J**.

To access previous screens, press **F2**. To return to the Main Menu, press **F1**.

Finally, you learned how to access online help. To access the online help screens, either press **F3** or **?**.

## Session 2: Selecting a Device

This Session describes how to tell UniSite the manufacturer and part number of the device you are using. The device selection process is a two-step process: first you select the device manufacturer, and then you select the device part number.

Read this Session if you are going to select a device that is supported by an algorithm included on the UniSite Algorithm disk. The next Session, "Selecting a Keep Current Algorithm", covers how to select a device that is supported by a Keep Current Express algorithm.

For more information on the Keep Current Express Subscription Service, see the documentation behind the Keep Current tab at the back of this binder.

### Before You Begin

You should have completed Session 1, which introduces you to the UniSite interface. Also, make sure that you are at the Main Menu before you start. (Press **F1** to return to the Main Menu.)

### Can I Use Another Device?

If you do not have an AMD 27256 (the device we are using for this Tutorial), then substitute the manufacturer and part number of the device you want to use. Keep in mind that the device you are using might not have the same capabilities as the AMD 27256. For example, the AMD 27256 supports Electronic ID while the Hitachi 27256 does not.

### Select a Manufacturer

First, choose the Select Device command from the Main Menu. (You can either press **S** or move the cursor to the Select Device menu item and press **↓**.) The Manufacturer List screen appears, and should look like the screen shown in Figure 4-4.

**Figure 4-4**  
The Device Manufacturer  
Selection Screen

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER:		PART #:		FAMILY/PIN CODE: 000 / 000	
I/O FORMAT:					
/					
MANUFACTURER LIST				Page 1 of 2	
(1) FAM/PINCODE	(14) Goldstar	(27) Mit-Plastics	(40) Ricoh		
(2) KEEP CURRENT	(15) Gould	(28) MMI-PROM	(41) Rockwell		
(3) Actel	(16) Harris	(29) MMI-LOGIC	(42) Samsung		
(4) Altera	(17) Hitachi	(30) Motorola	(43) Seeg		
(5) AMD	(18) Hyundai	(31) National	(44) SGS-Thomson		
(6) AMD-XPGM	(19) ICT	(32) Natnl-XPGM	(45) SGS-Tho-XPGM		
(7) Asahi Kasei	(20) IDT	(33) NEC	(46) Sharp		
(8) Atmel	(21) Intel	(34) Oki	(47) Signetics		
(9) Catalyst	(22) Intel-XPGM	(35) Omni-Wave	(48) Seiko Instr		
(10) Cypress	(23) Lattice	(36) Panasonic	(49) Simtek		
(11) Exel	(24) Microchip	(37) PLUS Logic	(50) SMS		
(12) Fairchild	(25) Mikroelek	(38) PLX	(51) Sony		
(13) Fujitsu	(26) Mitsubishi	(39) Raytheon	(52) TI		
Manufacturer: <b>1</b> Device Type: <b>all</b> Mode: <b>Single device</b>					
^N: Next page		^P: Prev page			
F1: Main menu		F2: Prev menu		F3 or ? : Help	

Examine the list of manufacturers and notice that they are listed alphabetically. Also, notice that some manufacturers are listed by their commonly used abbreviations. For example, Advanced Micro Devices is listed as AMD and Texas Instruments is listed as TI.

## Expanding Your Options

Look at the manufacturer screen again. Specifically, look at the upper-right corner of the screen and notice the text that looks similar to the following:

Page 1 of 2

This tells you how many screens (pages) of manufacturers there are and what page you are on. To go to the previous page of manufacturers, press **Ctrl** + **P**. To go to the next page of manufacturers, press **Ctrl** + **N**. When the screen repaints, you see a new list of manufacturers and the page counter now reads

Page 2 of 2

Keep paging through the screens until you find the manufacturer you are looking for. For this Session, we will be using a device from AMD. Page through the manufacturer listing until you see the entry for AMD.

## The Device Type Filter

The Device Type filter allows you to select which device types you want displayed. Press **Space** to cycle through the three settings: All, Memory & Emicros, or Logic Only. When you select a manufacturer, UniSite displays only those devices that fit the filter you selected.

For this Session, we will be using a 27256, which is an EPROM. Move the cursor to the Device Type field, press **Space** to cycle through the device types until Memory & Emicros appears in the field. Notice how the display changes when you cycle from one filter to another.

## The Programming Mode Filter

The Mode filter toggles UniSite between Single Device programming and Gang/Set programming. Gang programming is the programming of a single data file into multiple devices at once. Set programming is the partitioning and programming of a single large data file into multiple devices.

Move the cursor to the Mode field and press **Space**. Watch what happens to the Manufacturer List when you toggle from Single to Gang/Set: UniSite displays fewer manufacturers. This is because some of the manufacturers displayed in Single Mode do not make devices that can be programmed in Gang or Set Mode. As with the Device Type field, UniSite only displays the manufacturers that make devices that fit the currently selected filters.

For this Session, we will be programming a single 27256 EPROM. So, set the Mode filter to Single. However, if we wanted to make several copies of the EPROM, you would set the Mode filter to Gang/Set. But, for this Session, set the Mode filter to Single.

## Selecting the Manufacturer

For this Session, we will be using an AMD 27256 DIP EPROM. To select AMD from the Manufacturer List, move the cursor to the Manufacturer field, enter the number shown to the left of the name, and press **↵**.

After selecting the manufacturer, the Part Menu should appear, and should look like the screen shown in Figure 4-5.

**Figure 4-5**  
*The Part Number Selection Screen*

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER:		PART #:		FAMILY/PIN CODE: 000 / 000	
I/O FORMAT:					
/					
PART MENU FOR MANUFACTURER: AMD			All		Page 1 of 7
(1) 10020EG8	(14) 16L8-7	(27) 16R4-5-PLCC	(40) 16R6-5-PLCC		
(2) 10020EG8-FN	(15) 16L8-7PLCC	(28) 16R4-7	(41) 16R6-7		
(3) 10020EV8	(16) 16L8/A/B	(29) 16R4-7 PLCC	(42) 16R6-7-PLCC		
(4) 10020EV8-FN	(17) 16L8/A/B-LCC	(30) 16R4/A/B	(43) 16R6/A/B		
(5) 10H20EG8	(18) 16L8/A-PLCC	(31) 16R4/A/B-LCC	(44) 16R6/A/B-LCC		
(6) 10H20EG8-FN	(19) 16L8B-PLCC	(32) 16R4/A-PLCC	(45) 16R6/A-PLCC		
(7) 10H20EV8	(20) 16L8H-10	(33) 16R4B-PLCC	(46) 16R6B-PLCC		
(8) 10H20EV8-FN	(21) 16L8H-10PLCC	(34) 16R4H-10	(47) 16R6H-10		
(9) 16H8	(22) 16L8H-15	(35) 16R4H-10PLCC	(48) 16R6H-10PLCC		
(10) 16H8B	(23) 16L8H-15PLCC	(36) 16R4H-15	(49) 16R6H-15		
(11) 16L8-4-PLCC	(24) 16LD8	(37) 16R4H-15PLCC	(50) 16R6H-15PLCC		
(12) 16L8-5	(25) 16R4-4-PLCC	(38) 16R6-4-PLCC	(51) 16R8-4-PLCC		
(13) 16L8-5-PLCC	(26) 16R4-5	(39) 16R6-5	(52) 16R8-5		
Select Part <input checked="" type="checkbox"/> ^N: Next page      ^P: Prev page      Return: Load Algorithm F1: Main menu      F2: Prev menu      F3 or ?: Help					

## Select a Device Part Number

Selecting a device part number is the same as selecting a device manufacturer: find the item in the menu and enter the number beside the item. In this case we are looking for a 27256.

### Where Is It?

Notice that the screen is full of part numbers, and that the part numbers are arranged alphanumerically. If you examine the screen, you might find that the 27256 is not listed. This is because all the supported devices for this manufacturer could not be shown on one screen.

### Expanding Your Options

Look at the screen again. Specifically, look at the upper-right corner of the screen and notice the text that looks similar to the following:

Page 1 of 5

This tells you how many screens (pages) of devices there are and what page you are on. To go to the next page, press **[Ctrl] + [N]**. When the screen repaints, you see a new list of devices and the page counter now reads

Page 2 of 5

Keep paging through the screens until you find the 27256 part number.

## Reviewing Your Options

If you scroll too far forward, and want to look at a previous screen, press **[Ctrl] + [P]** until you are back to where you want to be.

### Found It

After finding the 27256 on the part menu, type the number enclosed in parenthesis. For example, in Figure 4-5, you would type **[7] [J]**.

UniSite loads the algorithm for the device you selected, in this case an AMD 27256. While UniSite is loading the algorithm, the action symbol rotates. (Remember, the action symbol is located at the left end of the message bar at the top of the screen.)

## Problems?

If you try to select a device before properly updating a new version of software, UniSite displays the following error message:

Error: Software security violation

If you are using a new version of software (i.e., you received an update) for the first time, you must perform the Update operation prior to selecting a device command. See the description of the Update command in Chapter 5 for more information.

---

*Note: You do not have to run the Update command on an "out of the box" UniSite. However, you do need to run the Update command on any subsequent updates to the software.*

If you didn't receive any error messages when you selected the AMD 27256, then don't worry: your system software is installed properly. Continue with this Session.

## Done

When UniSite has loaded the programming algorithm for the device you have selected, UniSite will return to the Main Menu. The manufacturer and part number of the device you selected will appear in the status window. At this point, you will see only screens related to the type of device you selected. For example, if you choose a logic device, you will see only screens that are required to load, program, edit, and verify a logic device.

## Accessing Device-specific Online Information

Some devices have special information relating to their use and programming. The special information is listed in the Device List as footnotes and is also available online. If you select a device that has footnotes or other device-specific information, UniSite displays the following message in the message bar:

Hit F3 or ? to view device specific message.

To view the online information, press **F3** or **?**. The screen clears and UniSite displays the device-specific information. If there is more than one screen of device-specific information, press **Ctrl** + **N** to view the next screen of information. Press **F2** to exit the help screen.

For this Session, the device you have selected does not require any online information. However, if you had selected a different device, a Lattice 22V10 for example, you would have seen the message described above.

## About Family/Pinout Codes

While looking at the manufacturer screen, you might have noticed the FAM/PINCODE entry. FAM/PINCODE stands for family/pinout code and is an alternate way of selecting a device. For more information, see the section titled "Family/Pinout Code Select Screen" in Chapter 5.

Be aware that a single family/pinout code is not always unique to a single device: several devices can, and often do, share the same family/pinout code.

If you select a device by entering the manufacturer name and device part number, you can be sure that UniSite will select the programming algorithm for that specific device. However, if you select a device by entering the family/pinout code, you are only guaranteed that UniSite will select the first programming algorithm that matches the family pinout code you entered.

We suggest that you use manufacturer name and device part number to select devices.

---

**CAUTION:** *Be sure you enter the proper family and pinout codes for the device you are using. If you enter an incorrect family and pinout code, you may damage your device.*

*Be aware that although you may enter an independently valid family code and an independently valid pinout code, a combination of the two may be invalid (illegal).*

*Family/pinout combinations not contained in the UniSite Device List are considered illegal. Data I/O assumes no responsibility or liability for results produced by entry of illegal family/pinout combinations.*

## Review

Selecting a device is a two-step process.

- First, select the manufacturer of the device.
- Second, select the part number of the device.

Some devices have special information related to their use and programming. The information is available online and can be viewed after a device is selected. When prompted, press **F3** or **?** to view the information.



## Session 3: Selecting a Keep Current Algorithm

This Session describes how to select a device that is supported by a Keep Current algorithm you downloaded from the Keep Current Bulletin Board System (BBS). The device selection process is a two-step process: first UniSite displays a list of the available Keep Current algorithms, and then you select the algorithm.

Read this Session if you are going to select a device that is supported by a Keep Current algorithm. The previous Session, "Selecting a Device", covers how to select a device that is supported by an algorithm that is included on the UniSite Algorithm disk.

### Before You Begin

You should have completed Session 1, which introduces the UniSite interface. Also, make sure that you are at the Main Menu before you start. (Press **[F1]** to return to the Main Menu.)

Also, you should have placed your Keep Current algorithm(s) on a DOS formatted 3.5-inch disk. See the Keep Current documentation for more information.

### Can I Use Another Device?

If you have not downloaded a Keep Current algorithm for your UniSite, you will not be able to complete this Session. However, you can still read the remainder of the Session to learn more about how to select a Keep Current algorithm. Or, you can skip this Session and continue with Session 4.

If you select a device supported by a Keep Current algorithm, keep in mind that the device you are using might not have the same capabilities as the device we are using for the rest of this Tutorial.

### Select the Keep Current Option

First, choose the Select Device command from the Main Menu. (Either press **[S]** or move the cursor to the Select Device menu item and press **[J]**.) The Manufacturer List screen appears, as shown in Figure 4-6.

**Figure 4-6**  
The Device Manufacturer Selection Screen

```

FILENAME:          RAM AVAIL: 128 OF 128KB    REV: X.XX  Y.YY  Z.Z
MANUFACTURER:     PART #:                    FAMILY/PIN CODE: 000 / 000
I/O FORMAT:
/

```

MANUFACTURER LIST				Page 1 of 2
(1) FAM/PINCODE	(14) Goldstar	(27) Mit-Plastics	(40) Ricoh	
(2) KEEP CURRENT	(15) Gould	(28) MMI-PROM	(41) Rockwell	
(3) Actel	(16) Harris	(29) MMI-LOGIC	(42) Samsung	
(4) Altera	(17) Hitachi	(30) Motorola	(43) Seeq	
(5) AMD	(18) Hyundai	(31) National	(44) SGS-Thomson	
(6) AMD-XPGM	(19) ICT	(32) Natnl-XPGM	(45) SGS-Tho-XPGM	
(7) Asahi Kasei	(20) IDT	(33) NEC	(46) Sharp	
(8) Atmel	(21) Intel	(34) Oki	(47) Signetics	
(9) Catalyst	(22) Intel-XPGM	(35) Omni-Wave	(48) Seiko Instr	
(10) Cypress	(23) Lattice	(36) Panasonic	(49) Simtek	
(11) Exel	(24) Microchip	(37) PLUS Logic	(50) SMS	
(12) Fairchild	(25) Mikroslek	(38) PLX	(51) Sony	
(13) Fujitsu	(26) Mitsubishi	(39) Raytheon	(52) TI	

```

Manufacturer: 1 Device Type: All Mode: Single device
^N: Next page ^P: Prev page
F1: Main menu F2: Prev menu F3 or ? : Help

```

Examine the list of manufacturers and locate the KEEP CURRENT entry. All the Keep Current algorithms are located under the KEEP CURRENT menu.



### Expanding Your Options

Look at the manufacturer screen again. Specifically, look at the upper-right corner of the Manufacturer List screen and notice the text that looks similar to the following:

Page 1 of 2

This tells you how many screens (pages) of manufacturers there are and what page you are on. If you do not see the KEEP CURRENT entry, press **Ctrl** + **N** to display the next screen of manufacturers. (Press **Ctrl** + **P** to display the previous screen of manufacturers.) When the screen repaints, you will see a new list of manufacturers and the page counter will read

Page 2 of 2

Page through the screens until you find the KEEP CURRENT entry.

### The Device Type Filter

The Device Type filter has no effect on the devices displayed when you select Keep Current devices.

### The Programming Mode Filter

The Mode filter has no effect on the devices displayed when you select Keep Current devices. However, setting the Mode filter to Gang/Set will enable gang/set programming for devices that support that programming mode. Press **Space** to toggle between Single Device operations and Gang/Set operations.

### Insert the Keep Current Algorithm Disk

Before you select the KEEP CURRENT entry, make sure the 3.5-inch disk containing the Keep Current algorithm(s) is inserted in drive B. If you are using a single-drive UniSite, insert the disk in drive A.

### Selecting the Manufacturer

For this Session, we will be selecting a Keep Current algorithm that you have downloaded from the Data I/O Keep Current BBS. Regardless of manufacturer, all Keep Current algorithms are located under the KEEP CURRENT entry.

To select KEEP CURRENT from the Manufacturer List, move the cursor to the Manufacturer field, enter the number shown to the left of the entry and press **↓**. For example, in Figure 4-11 you would type **2↓**.

## What do you see?

**Figure 4-7**  
The Keep Current Part List Screen

After selecting the KEEP CURRENT entry, the Keep Current Part List screen will appear, as shown in Figure 4-7.

```

FILENAME:          RAM AVAIL: 128 OF 128KB      REV: X.XX  Y.YY  Z.Z
MANUFACTURER:     PART #:                      FAMILY/PIN CODE: 000 / 000
I/O FORMAT:
-

```

KEEP CURRENT PART LIST Page 1

Call Keep Current BBS at 1-206-881-3465 for latest KEEP CURRENT part list

	Manufacturer	Part	Alg. Rev.	File name
(1)	AMD	CE2ZU10-UES-PLCC	3.7a	A:AMD.KC1
(2)	AMD	1020EG8-FN	3.7b	A:AMD.KC2
(3)	AMD	16R4H-15	3.7a	A:16R4H_15.KC3
(4)	ALT	910T-PLCC	3.7b	B:910T.KC1
(5)	EXEL	46C15	3.7a	B:46C15.KC1
(6)				
(7)				
(8)				
(9)				
(10)				

Select Part 1

^N: Next page	^P: First page	
F1: Main menu	F2: Prev menu	F3 or ?: Help

If you see the Keep Current Part List screen, continue with the section titled "Select the Keep Current Algorithm."

If you do not see the Keep Current Part List screen, you are probably looking at a screen that describes the Keep Current Express service. UniSite will not display the Keep Current Part List screen if you do not have any Keep Current algorithms.

If you have downloaded some Keep Current algorithms, make sure the disk with the algorithms is in drive B. If you are using a single-drive UniSite, insert the disk in drive A. After you insert the disk with the Keep Current algorithms, press **[F1]** and restart this Session.

## Select the Keep Current Algorithm

At this point, you should be looking at the Keep Current Part List screen, which is shown in Figure 4-7.

Selecting a Keep Current algorithm is the same as selecting a standard device algorithm: find the item in the menu and enter the number corresponding to the item. In this case you are looking for a Keep Current algorithm you downloaded from the Keep Current BBS.

## Where Is the Algorithm?

Notice that the Keep Current Part List screen lists both the device manufacturer and the device part number. Also, notice that the devices are listed in no particular order: UniSite lists the devices in the order that they are found on the disk.

If you do not see the algorithm you are looking for, make sure the disk with the Keep Current algorithm is inserted in UniSite. If you have more than 10 algorithms on one disk, the algorithm you are looking for could be on the next screen of algorithms. Press **[Ctrl] + [N]** to display the next screen of algorithms.

Keep paging through the screens until you find the algorithm you are looking for.

## Reviewing Your Options

If you page too far, press **[Ctrl] + [P]** to return to the first screen of Keep Current algorithms.

## Found It

After finding the algorithm, type the number enclosed in parentheses and press ☐.

UniSite will load the algorithm for the device you selected. The action symbol rotates while UniSite is loading the algorithm.

After loading the algorithm, UniSite returns to the Main Menu and updates the status window to show the device you have selected.

## Keep Current Algorithms and Software Updates

Each Keep Current algorithm is designed to work with a particular version of system software. When UniSite displays the available Keep Current algorithm(s) on the Keep Current Part List screen, it filters out the Keep Current algorithms that are invalid and incompatible with the installed version of system software.

A Keep Current algorithm and a version of UniSite system software are compatible when the numbers to the left and immediate right of the decimal point match. For example,

Algorithm Version	System Software Version	Compatible?
3.51	3.5	Yes
3.7	3.7	Yes
3.6	3.7	No

Keep Current algorithms are valid for one major release of software because the Keep Current algorithms are included with the next release of system software.

The following example illustrates a typical Keep Current scenario:

- In May, you update your system software to version X.4. At the same time, you enroll in the Keep Current Express Subscription Service.
- In June, Cruft Technologies announces a new device, the Cruft 1263.
- A week later, Data I/O announces support for the Cruft 1263 and places a Keep Current algorithm for the Cruft 1263 on the Keep Current BBS.
- The next day, you call the Keep Current BBS and download the new algorithm for the Cruft 1263.
- In August, Data I/O releases version X.5 system software, complete with the new algorithm for the Cruft 1263.
- You update your UniSite to version X.5 system software. The algorithm for the Cruft 1263 is part of the system software.

With Keep Current algorithms, you get immediate device support, rather than having to wait for the next release of system software.

---

## Special Note

The next four Sessions cover how to load programming data into UniSite. Because each method applies to a different case, choose the method that most resembles your situation. The three methods are listed below and are explained briefly.

**Session 4:  
Loading from a Device**

In this Session, you load device data from a previously programmed device (a master device). If you do not have a master device and you still want to follow the steps in the Session, you can use a blank device. (Although the data loaded into UniSite will be blank, you will have a chance to follow the procedures.)

**Session 5:  
Loading Data from Disk**

In this Session, you load device data from UniSite's internal disk drive. A sample data file has been provided on the UniSite System disk for you to use.

**Sessions 6, 7, & 8:  
Loading Data from a Port**

In these Sessions, you load device data into UniSite from a host, such as a PC or workstation connected to one of the serial ports on UniSite. If you are using a PC, you need a terminal emulation package (like Data I/O's HiTerm). If you are using a workstation, you need to know how to transfer a file out of the workstation through the workstation's serial port.

---

## Session 4: Loading Data from a Device

This Session illustrates how to load data into UniSite from a master device. (A master device is a device that is already programmed.) The device used for this session is an AMD 27256 DIP EPROM. If you have a different memory device, you can still follow along, substituting your device manufacturer and part number in place of the AMD 27256.

If you do not have a master device, we suggest you go to the next Session, which shows you how to load data from UniSite's disk drive. When you have completed Session 4, skip the next three Sessions and continue with Session 9.

### Before You Begin

Before starting this Session, you should have completed the first two Sessions. Specifically, you should be familiar with UniSite's interface, and you should know how to select a device.

Also, you should have Site48 (or Site40) installed in UniSite. If Site48 (or Site40) is not installed in UniSite, or if you would like to review the instructions for installing/removing Site40 or Site48, see Chapter 2, "Setup and Installation." Read the section titled "Installing a Module" for more information.

In any event, you should not go any further until you are familiar with installing/removing a module or inserting/removing a device.

### Can I Use Another Device?

If you do not have an AMD 27256 (the device we are going to use for this Session), then you should go to the Select Device screen and select the device you are going to program. Keep in mind that the device you select might not have the same capabilities as the AMD 27256. For example, the AMD 27256 supports Electronic ID while the Hitachi 27256 does not.

### Select a Device

Before loading data from a device, you must first tell UniSite what type of device you are using.

Choose Select Device from the Main Menu. Select the manufacturer and part number of the master device.

Remember, if you don't see the part number on the first screen of part numbers, press **Ctrl** + **N** to display the next screen of part numbers. Also, if you don't see the device part number you are looking for, go back to the Manufacturer List and look at the Device Type field. This field allows you to filter out certain device types. Press **Space** to cycle through the three settings: All, Memory & Emicros, or Logic Only. When you select a manufacturer, UniSite displays only devices that fit the filter you selected.

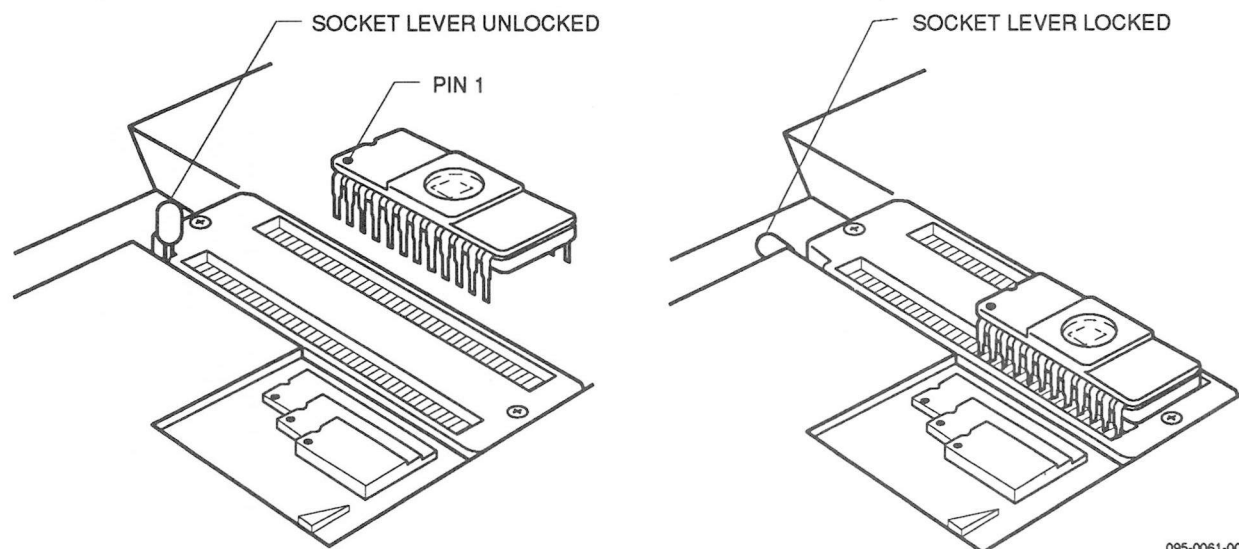
When the programming algorithm has finished loading, the status window will display the selected device and you will return to the Main Menu. Also, UniSite will set the load parameters to match the size of the selected device.

## Insert the Device

Make sure Site48 is properly installed in UniSite. If the device socket is locked, unlock it by pulling up the socket lever. Insert the device into the device socket, making sure that the device is bottom-justified and that pin 1 is in the upper-left corner.

Lock the device into place by pressing the socket lever down. Figure 4-8 shows examples of locked and unlocked sockets and also shows the proper orientation for a DIP device.

**Figure 4-8**  
Inserting a DIP Device



095-0061-002

*Note: Insert DIP devices into UniSite AFTER you have a module installed in UniSite.*

## Load the Data

With the device type selected and the master device in the socket, the next step is to load the data into UniSite's RAM. (You could also store the data on the disk drive, but RAM is faster.)

Choose Load Device from the Main Menu. The Load Memory Device parameter screen, shown in Figure 4-9, is displayed.

**Figure 4-9**  
The Load Memory Device  
Parameter Screen

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER:AMD		PART #: 27256		FAMILY/PIN CODE: 0C1 / 032	
I/O FORMAT:					
MAIN MENU					
Select device	Destination (RAM, Disk)		R		
Quick copy	Data word width		8		
Load device	Next device		1		
Program device	Total set size		1		
Verify device	User data size		8000		
More commands	Next operation begins at		0		
Return: Execute      F4: Select mode/options F1: Main menu        F2: Prev menu        F3 or ? : Help					

## About Parameters

Parameters are user-definable fields that either qualify or quantify UniSite's actions. Qualifying parameters, such as Illegal Bit Check, control whether or not UniSite performs an operation. Quantifying parameters, such as Block Size or I/O Translation Format, give UniSite a range or variable to use in an operation.

Six different parameters are shown in Figure 4-9, including Destination and User Data Size.

## Parameter Screens

Look at the Load Memory Device screen. At the top of the dialog window, you see one of the following:

LOAD MEMORY DEVICE (all parameters)

LOAD MEMORY DEVICE (non-default)

There are two types of parameter screens: simple and complex. UniSite defaults to displaying the simple, Non-default parameters screen.

## What Is the Difference?

Both screens let you change load parameters. The All Parameters screen contains all the load parameters supported by the selected device, while the Non-default parameters screen contains a simplified subset of the load parameters supported by the selected device.

To see the difference between the two screens, press **[F4]**. If you were looking at the Non-default screen, you are now be looking at the All Parameters screen. (Likewise, if you were looking at the All Parameters screen you are now be looking at the Non-default screen.) As you can see, there is roughly a 2:1 difference in the number of parameters between the two screens. The All Parameters screen is shown in Figure 4-10. Compare the difference between the two screens.

**Figure 4-10**  
*The All Parameters Load Memory Screen*

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER:AMD		PART #: 27256		FAMILY/PIN CODE: 0C1 / 03Z	
I/O FORMAT:					
<div> <div> MAIN MENU  Select device  Quick copy  <b>Load device</b>  Program device  Verify device  More commands </div> <div> LOAD MEMORY DEVICE (all parameters)  Destination (RAM, Disk) <b>R</b>  Data word width <b>8</b>  Next device <b>1</b>  Total set size <b>1</b>  User data size <b>8000</b>  Next operation begins at <b>0</b>  Memory begin address <b>0</b>  Device begin address <b>0</b>  Device block size <b>8000</b> </div> <div> Set auto-increment <b>N</b>  Compare elec ID <b>N</b> </div> </div>					
Return: Execute		F4: Select mode/options			
F1: Main menu		F2: Prev menu F3 or ? : Help			

**Which Should I Use?**

During the course of normal device operations, you will usually need only the parameters on the Non-default screen. But if you want to do more complicated operations, you need to change some of the parameters on the All Parameters screen. A complicated load operation might be loading only part of the data from a device.

You will not be doing any complicated load operations for this Session, so you should be looking at the Non-default screen. If the All Parameters screen is displayed, press **[F4]** to switch to the Non-default screen.

**Setting the Parameters**

Look again at the parameters on the screen. With these parameters, you can change the destination, word width, memory begin address, and block size of the data to be loaded. But, for this Session, make sure that the parameters are set to the values shown in Figure 4-9.

**Changing a Parameter**

To change the value of a parameter entry, move the cursor to the desired field and type the new value. Then either press **[Enter]** or use the arrow keys to move the cursor to a new field. If you try to enter an incorrect parameter, UniSite beeps and the message line reads

Illegal parameter value

If you enter a valid parameter, the message line reads

Parameter Entered

For more information on any of the parameters, see Chapter 5, "Commands." (Or you could use online help to get information on each of the parameters on the Load Memory Device screen.)

**Loading the Data**

Now that you have set the parameters, you are ready to load the data from the device.

To begin the load, press **[Enter]**. When UniSite has loaded the data, it displays the following message in the message bar:

OPERATION COMPLETE: Sumcheck = xxxxxxxx

where xxxxxxxx represents the 8-digit sumcheck of the data loaded from the device.

**Review**

When you select Load Device from the Main Menu, you see one of two parameter-entry screens: the simple Non-default screen or the complex All Parameters screen. Press **[F4]** to toggle between the two parameter-entry screens.

When you have entered the parameters, press **[Enter]** to begin the loading.

When UniSite is finished loading the data from the device, it displays an 8-digit sumcheck of the data loaded. (UniSite displays a 4-digit sumcheck when you load data from a logic device.)



---

## Session 5: Loading Data from Disk

This Session illustrates how to load binary device data into UniSite from one of UniSite's internal disk drives. To help you with this Session, we have included a data file on UniSite System disk. You can use the sample data file to practice loading data files from a disk in one of UniSite's disk drives. The sample file is named **sample.bin**.

When you have completed this Session, skip the next two Sessions and continue with Session 8. If you have a data file you want to download to UniSite, you should skip this Session and complete the next two Sessions.

### Before You Begin

Before starting this Session, you should have completed the first two Sessions. Specifically, you should be familiar with UniSite's user interface, and you should know how to select a device.

### Getting There

Go to the More Commands menu and notice the following two menu items:

File Operations

Transfer Data

They both sound like logical places to put a command for loading a data file. In fact both menus contain commands for loading data files, but the two commands manipulate data in different ways.

### What's the Difference?

The Transfer Data command calls up the Transfer Menu. On this menu, you will find commands used for transferring formatted data files between UniSite and another machine (like a PC). You will also find commands for transferring **formatted** data files (not binary files) between UniSite and a disk in one of UniSite's disk drives. This menu does not contain the command you are looking for.

The File Operations command calls up the File Menu. On this menu you will find DOS-like commands: such as load, rename, delete, format disk, and copy disk. The command you are looking for, the Load Data command, is on the File Menu. The Load Data command simply loads the binary data file directly into memory.

### When Would I Use this Command?

Use the Load Data command if the data file you want to load contains a binary image of the data you want to program into a device. The Save File command creates a binary image file by copying the data in UniSite's RAM directly to a disk file.

---

*Note: Do not use the Load Data and Save File commands with formatted data files. Use the Input from Disk and Output to Disk commands to load and save formatted data files. See Chapter 5, "Commands," for more information.*

## The File Menu

**Figure 4-11**  
The File Menu

To get to the File menu, select File Operations from the More Commands menu. The File menu appears and should look like the screen shown in Figure 4-11.

```

FILENAME:          RAM AVAIL: 128 OF 128KB   REV: X.XX  Y.YY  Z.Z
MANUFACTURER:AMD  PART #: 27256             FAMILY/PIN CODE: 0C1 / 032
I/O FORMAT:
\
FILE MENU
View directory
Load file
Save file
Purge file
Rename file
Copy file
Duplicate disk
Format disk

F1: Main Menu      F2: Prev Menu      F3 or ? : Help

```

## Viewing a Directory

The View Directory command displays a directory of the files stored on the disks in both disk drives. The files on the disk in the lefthand drive (drive A:) are prefixed with A: and the files on the disk in righthand drive (drive B:) are prefixed with B:. The sample data file is named **sample.bin**. Select the View Directory command and locate the test file.

If you don't see **sample.bin**, don't worry; UniSite displays only 28 files at one time. Press **[Ctrl] + [N]** to see the next page of files.

When you have found **sample.bin**, press **[F2]** to return to the File menu.

## Loading the File

Now that you know the name of the file (**sample.bin**), and have found the disk it is on, you are ready to load the file. Select Load File from the File menu. The dialog window displays a directory of the files on the disks in UniSite's two disk drives. (Notice that the Load File command displays a directory similar to the View Directory command.) A screen similar to what you will see is shown in Figure 4-12.

**Figure 4-12**  
The Load File Dialog Screen

```

FILENAME:          RAM AVAIL: 128 OF 128KB   REV: X.XX  Y.YY  Z.Z
MANUFACTURER:AMD  PART #: 27256             FAMILY/PIN CODE: 0C1 / 032
I/O FORMAT:
-
FILE MENU
View directory
Load file
Save file
Purge file
Rename file
Copy file
Duplicate disk
Format disk

LOAD DATA FILE
A:UUUFY .SYS 13376
A:CALPAM .SYS 136
A:ORDINF .SYS 1014
A:DEFLTERM.SYS 1578
A: 146432 bytes free.
B:ALG .SYS 674604
B:DEUFNOTE.SYS 41240
B:CALIB .SYS 1433
B:ADAPTERS.SYS 6440
B: 4096 bytes free.

Filename
Memory begin address 0

^N: Next page      ^P: First page      Return: Execute
F1: Main Menu      F2: Prev Menu      F3 or ? : Help

```

To load the sample data file, follow the steps below:

1. Move the cursor to the Filename field and type `b:sample.bin`  .  
UniSite displays the following message in the message bar:

Parameter Entered

2. Next, move the cursor to the Memory Begin Address field and enter `0`  .
3. Press  to begin loading the data file. The action symbol rotates while UniSite loads the data file, and displays the following message in the message bar:

Loading data from file.

If the data file loads successfully, UniSite displays the following message in the message bar:

Done .

### Did the File Load Successfully?

If the sample data file did not load successfully, return to the beginning of this Session and try it again.

If the sample data file loaded successfully, you will be returned to the Load File dialog screen. Skip to Session 8. In that Session you will find out what the sample file contains, and you will learn how to edit the sample file.

## Review

You can load device data into UniSite by loading a data file from one of UniSite's internal disk drives. Use the commands on the File Operations menu (such as the Load File command) if your data file is stored in binary image format. Use the commands on the Transfer Data menu (such as the Input from Disk command) if your data file is stored in a specific data translation format, such as Intel Hex or JEDEC. There is a list of supported formats at the beginning of Chapter 7, "Translation Formats."

When you select the Load File command, UniSite displays a directory of the files on the disks in UniSite's two drives. Enter the drive name and filename of the file you want to load. For example, enter `a:sample.bin`.

If you do not see the file you want to load, press **Ctrl** + **N** to display the next page of files, or press **Ctrl** + **P** to display the previous page of files. If you are loading data for a memory device, you should also enter a memory begin address.

Finally, press  to begin the loading. During the load operation, the action symbol rotates. If the load operation completes successfully, UniSite displays the following message in the message bar:

Done .

## Session 6: Selecting a Translation Format

This Session and the following Session are companion Sessions. This Session introduces you to translation formats and shows you how to select a translation format. The next Session shows you how to load a data file through UniSite's Terminal port.

### About Translation Formats

Translation formats represent different ways of representing the device data in a data file. A data file could contain the fuse pattern and test vectors for a logic device or the data for a memory device.

### Getting There

Starting at the Main Menu, press **[M][T][F]** to get to the Translation Format screen, which should look like Figure 4-13. If you get lost, return to the Main Menu and start over. (Remember, press **[F1]** to get to the Main Menu.)

**Figure 4-13**  
The Translation Format  
Selection Screen

```

- I/O TRANSLATION FORMAT

09 5 Level BNPF W/O STX      36 ASCII-Oct "X" With SOH  92 JEDEC (kernel)
08 5 Level BNPF With STX    31 ASCII-Oct "X" With STX  81 MOS Technology
14 Altera POF               32 ASCII-Oct Apostrophe  82 Motorola Exorcise
07 ASCII-B10F W/O STX      37 ASCII-Oct SMS          87 Motorola Exormax
03 ASCII-B10F With STX     35 ASCII-Oct SP With SOH  95 Motorola S3
06 ASCII-BHLLF W/O STX     30 ASCII-Oct SP With STX  70 RCA Cosmac
02 ASCII-BHLLF With STX    10 Binary                85 Sig Absolute Obj
05 ASCII-BNPF W/O STX      11 DEC Binary            13 Spectrum W/O STX
01 ASCII-BNPF With STX     80 Fairchild Fairbug     12 Spectrum With STX
56 ASCII-Hex "X" With SOH  89 HP 64000 Absolute     94 Tek Hex Extended
51 ASCII-Hex "X" With STX  96 HP Unix               86 Tek Hex
58 ASCII-Hex "." With SOH  99 Intel Hex-32          90 TI SDSMAC
53 ASCII-Hex "." With STX  83 Intel Intellec 8/MDS  04 TI SDSMAC (320)
52 ASCII-Hex Apostrophe    80 Intel MCS-86 Hex Obj
57 ASCII-Hex SMS           98 Intel OMF286
55 ASCII-Hex SP With SOH   97 Intel OMF386
50 ASCII-Hex SP With STX   91 JEDEC (full)

Select translation format 00

F1: Main menu      F2: Prev menu      F3 or ?: Help      Return: Execute

```

### Making a Choice

Now that you are at the I/O Translation Format selection screen, you need to choose a translation format to use. Normally, you would select the same format as your data file. For this Session, select the Intel 8-bit Hex translation format.

Select the translation format the same way you selected a device manufacturer: find what you are looking for and type the number beside it. So, for the format selection screen shown in Figure 4-13, you would type **[8][3][ ]** to select the Intel 8-bit Hex (Intel Intellec 8/MDS) translation format. When you press **[ ]** UniSite configures itself for the selected translation format and returns you to the Transfer Menu. Notice that the I/O Format line in the status window has changed and now reads

```
I/O FORMAT: Intel Intellec 8/MDS
```

### Review

Use the Format Select command on the Transfer Data menu to select a new translation format. After locating the desired format, type the number to the left of the format.

---

## Session 7: Loading Data from a PC Using HiTerm

In this Session, you will learn how to use HiTerm to download data from a PC to UniSite through one of the serial ports on UniSite.

---

*Note: If you are using a DOS-based PC, we recommend you use HiTerm as your terminal emulation software. Although you might already have other terminal emulation software on your PC, HiTerm was written to work with UniSite and can download files to UniSite at 115.2K baud.*

### Why HiTerm?

At this point, you might be wondering why we recommend you use HiTerm and not another terminal emulator. First and foremost, only HiTerm supports 115.2K baud downloading. Second, HiTerm supports formatted binary transfer, while some other terminal emulators do not. Third, HiTerm was written by Data I/O with UniSite in mind. HiTerm does all the opening and closing of files automatically; with other terminal emulators you must do that yourself.

### Before You Begin

This Session assumes you have a DOS-based PC connected to UniSite. See Chapter 2, "Setup and Installation," for information on connecting a PC to UniSite.

Also, you must have HiTerm properly installed on the PC connected to UniSite. See Chapter 2, "Setup and Installation," for quick installation instructions for HiTerm. See the *HiTerm User Manual* behind the Utilities tab in this binder if you need more information about installing HiTerm.

Finally, we suggest you have UniSite configured for High Speed Download, which allows you to download data file to UniSite at 115.2K baud. See the "Setting Up High Speed Download" section at the end of Chapter 2 for more information about configuring UniSite for High Speed Download.

### What to Transfer?

We suggest you use **sample.dat**, a sample data file supplied on the HiTerm disk. If you want to transfer a different data file, substitute its filename for **sample.dat**. If your data file is in a format other than Intel Intellec 8/MDS, use the Format Select command to select that format. See Session 6 for information on selecting a translation format.

## Preparing UniSite

**Figure 4-14**  
The Download Data from Host Screen

From the Main Menu, press **M T D** to get to the Download Data from Host screen, which is shown in Figure 4-14.

FILENAME:		RAM AVAIL: 128 OF 128KB	REV: X.XX	Y.YY	Z.Z
MANUFACTURER: AMD		PART #: 27256	FAMILY/PIN CODE: 0C1 / 032		
I/O FORMAT: Intel Intellec 8/MDS					
/					
TRANSFER MENU		DOWNLOAD DATA FROM HOST			
Download data		Source (Remote, Terminal)	R		
Upload data		Destination (RAM, Disk)	R		
Compare data		I/O Translation Format	83		
Format select		I/O addr offset	FFFFFFFF		
Input from disk		Memory begin address	0		
Output to disk		User data size	0		
Serial output		Download host command			
		F1: Main menu F2: Prev menu F3 or ?: Help			

Look at the parameters and make sure they reflect your system configuration. If you are running HiTerm on a PC connected to the Remote port on UniSite, use the following settings:

- Source – Remote port
- Destination – RAM
- I/O Translation Format – 83 (Intel Hex)
- I/O Address Offset – FFFFFFFF
- Memory Begin Address – 0
- User Data Size – 0

If your configuration is different, change the parameters to match your configuration. For example, select translation format 91 if the data file you will download is a JEDEC file.

For now, leave the Download Host Command blank; you will fill that in later. If the parameters are correct, skip ahead to the section titled "Downloading the File."

*Note: See Chapter 5, "Commands," if you want to find out more about the parameters on the Download Data from Host screen.*

## About Parameters

Parameters are user-definable fields that determine what UniSite does. Parameters either qualify or quantify UniSite's actions. Qualifying parameters, such as Source and Destination, control the type of operation to perform. Quantifying parameters, such as Block Size or I/O Translation Format, give UniSite a range or variable to use in an operation.

Seven parameters are shown in Figure 4-14, including Source, Memory Begin Address, and Download Host Command.

### Changing a Parameter

Follow the steps below if you need to change a parameter.

1. Move the cursor to the field you need to change.
2. Type the new value and move the cursor to another field. If the parameter is acceptable, UniSite displays

Parameter Entered

in the message bar. (Remember, the message bar is located below the status window.)

If you enter an incorrect parameter, UniSite beeps and displays an error message. Continue until the displayed parameters reflect your configuration.

### Downloading the File

#### Locate the Data File on the PC

Change to the directory containing the data file you are going to download. (Remember, if you are using the sample data file supplied with HiTerm, you are looking for the **sample.dat** file.)

If you are in DOS, use the CD and DIR commands to change to the directory containing the data file to download.

If you are running HiTerm, press **Alt** + **F6** **↓** to view the current directory. If **sample.dat** is in the current directory, press **↓** to return to the terminal emulation.

---

*Note: The function key commands in this Session are for IBM-compatible PCs. However, if you are using an NEC-9800 PC, the HiTerm commands will be slightly different. Consult the HiTerm documentation for more information.*

If **sample.dat** is not in the current directory, press **Alt** + **F5** to bring up HiTerm's change directory command. Type the drive and pathname of the directory containing **sample.dat** and press **↓** to change to that directory. Press **Alt** + **F6** **↓** to view the current directory. If **sample.dat** is in the current directory, press **↓** to return to the terminal emulation. If the data file is not in the current directory, repeat the procedure until you find the data file you want to download.

#### About the Download Host Command

Earlier in this Session, you entered the parameters for the download, but you left the Download Host Command parameter blank. The Download Host Command is a command that UniSite sends to the PC to initiate the download. Because you are running HiTerm, you can specify a special Download Host Command, the TRANSFER command.

When UniSite sends the TRANSFER command (or TR for short) it tells HiTerm to download a specified file to UniSite.



If the sample data file is in your current directory, move the cursor to the Download Host Command field and enter the following Download Host Command

```
tr sample.dat 
```

Remember to substitute the appropriate filename if you are using a different file. When you enter the Download Host command, the message bar displays

```
Parameter Entered
```

### Download the File

Press  to begin the download. The action symbol rotates while the data is being downloaded. When the download is finished the message bar displays

```
Data transfer complete. Data sum = xxxxxxxx
```

Go to the section titled "After the Download" when the download is complete.

### After the Download

By this point, you should have successfully downloaded a data file into UniSite.

### About the Sumcheck

When the download was completed, the message bar displayed

```
Data transfer complete. Data sum = xxxxxxxx
```

This message tells you two things: first, it tells you that the data transfer completed successfully, and second, it tells you what the sumcheck of the data transferred is. The sumcheck is shown above as *xxxxxxx*.

The sumcheck for memory devices is an eight-digit hexadecimal summation of the data downloaded. If you change one byte of information in the data file, the sumcheck will also change. The sumcheck is a good method of verifying that the data you downloaded matches the data on your host.

Later, when you program this data into a device, UniSite will generate another sumcheck. If the two are the same, then the data programmed is the same as the data downloaded. If the two sumchecks are different, then the data programmed is not the same as the data downloaded.

### Review

In this Session, you learned how to download data to UniSite from a host connected to UniSite's Terminal port. The steps were

- Select the translation format that matched the format of your data file.
- Go to the download screen by pressing .
- Set the parameters on the Download screen to match your setup.
- Enter the host Download Host Command. For example, to transfer the file `filename.dat` you would type `tr filename.dat` for a PC using HiTerm.



---

## Session 8: Loading Data from a Host

In this Session, you will learn how to download data from a host to UniSite through one of the serial ports on UniSite. The procedures in this Session apply to many types of hosts, including VAXes, UNIX-based workstations, and DOS-based PCs.

---

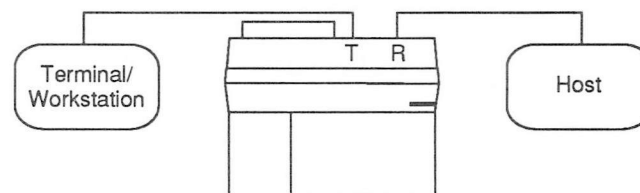
*Note: If you are using a DOS-based PC, we recommend that you use HiTerm as your terminal emulation software. Downloading a file with HiTerm is covered in the previous Session.*

---

### Before You Begin

This Session assumes that you have a host connected to one of the serial ports on UniSite and a terminal connected to the other serial port on UniSite. This type of configuration is called Transparent mode and is shown in Figure 4-15.

Figure 4-15  
Transparent Mode



095-0993-001

See Chapter 2, "Setup and Installation," for information on connecting a host and terminal to UniSite.

### About Transparent Mode

Transparent mode, shown in Figure 4-15, is a feature of UniSite that allows the programmer to be inline between your terminal and host computer. This eliminates the need for a switch box or a second link to the host, and enables you to download directly from the host to UniSite. The host could be a networked file server such as a VAX or a Sun. When setup properly, the terminal connected to UniSite can control both UniSite and the remote host.

In Transparent mode, UniSite passes all characters through its Terminal and Remote ports as if it weren't there. The two serial ports on UniSite can even operate at different baud rates. While operating UniSite from the terminal, press **Esc** **Ctrl** + **T** to toggle UniSite between terminal mode and transparent mode. UniSite remains in transparent mode until it receives another **Esc** **Ctrl** + **T** command, at which time it switches back to terminal mode.

### What to Transfer?

Using your development tools, create a small sample data file. For the rest of this Session, the sample data file will be referred to as **sample.dat**. If you give your sample data file a different name, substitute that name where you see **sample.dat**.

Also, the rest of this Session assumes that your sample data file is stored in the Intel Intellec 8/MDS data translation format. If your data file is in a different translation format, use the Format Select command to select that format. See Session 6 for information on selecting a data translation format.

## Preparing UniSite

**Figure 4-16**  
The Download Data from  
Host Screen

From the Main Menu, press **[M][T][D]** to get to the Download Data From Host screen, which is shown in Figure 4-16.

FILENAME:		RAM AVAIL: 128 OF 128KB	REV: X.XX Y.YY Z.Z
MANUFACTURER:AMD		PART #: Z7Z56	FAMILY/PIN CODE: 0C1 / 032
I/O FORMAT: Intel Intellec 8/MDS			
/			
TRANSFER MENU	DOWNLOAD DATA FROM HOST		
Download data	Source (Remote, Terminal)	8	
Upload data	Destination (RAM, Disk)	8	
Compare data	I/O Translation Format	83	
Format select	I/O addr offset	FFFFFFFF	
Input from disk	Memory begin address	0	
Output to disk	User data size	0	
Serial output	Download host command		
F1: Main menu F2: Prev menu F3 or ?: Help			

Look at the parameters and make sure they reflect your system configuration. Use the following settings if your host is connected to the Remote port on UniSite:

- Source – Remote port
- Destination – RAM
- I/O Translation Format – 83 (Intel Hex)
- I/O Address Offset – FFFFFFFF
- Memory Begin Address – 0
- User Data Size – 0

If your configuration is different, change the parameters to match your configuration. For example, select translation format 91 if the data file you will download is a JEDEC file.

For now, leave the Download Host Command blank; you will fill that in later. If the parameters are correct, skip ahead to the section titled "Downloading the File."

## About Parameters

Parameters are user-definable fields that determine what UniSite does. Parameters either qualify or quantify UniSite's actions. Qualifying parameters, such as Source and Destination, control the type of operation to perform. Quantifying parameters, such as Block Size or I/O Translation Format, give UniSite a range or variable to use in an operation.

Seven parameters are shown in Figure 4-16, including Source, Memory Begin Address, and Download Host Command.

### Changing a Parameter

Follow the steps below if you need to change a parameter:

1. Move the cursor to the field you need to change.
2. Type the new value and move the cursor to another field. If the parameter is acceptable, UniSite displays

Parameter Entered

in the message bar. (Remember, the message bar is located below the status window.)

If you enter an incorrect parameter, UniSite beeps and displays an error message. Continue until the displayed parameters reflect your configuration.

### Downloading the File

#### Locate the Data File on the Host

Change to the directory containing the file you are going to download. Before you change directories on the host, press **[Esc]** **[Ctrl]** + **[T]** to enter Transparent mode.

If you are using a UNIX-based host, use the CD command to change to the directory containing the data file to download.

---

*Note: The commands in this Session are for UNIX-based hosts. Substitute the appropriate commands if you are using a different type of host, such as a VMS-based machine. If you need more information, consult the system's documentation or your system administrator.*

Once you have changed to the directory containing the data file you are going to download, press **[Esc]** **[Ctrl]** + **[T]** again to leave Transparent mode and return to UniSite's full screen interface. You might have to press **[Ctrl]** + **[R]** to redraw the screen.

#### About the Download Host Command

Earlier in this Session, you entered the parameters for the download, but you left the Download Host Command parameter blank. The Download Host Command is a command that UniSite sends to the host to initiate the download. Because you are on a UNIX-based host, use the CAT command as the Download Host Command.

If the sample data file is in your current directory, enter the following Download Host Command

cat sample.dat **[Enter]**

Remember to substitute the appropriate filename if you are using a different file. When you enter the Download Host command, the message bar displays

Parameter Entered

## Download the File

Press **[J]** to begin the download. The action symbol rotates while the data is being downloaded. When the download is finished the message bar displays

```
Data transfer complete. Data sum = xxxxxxxx
```

## After the Download

By this point, you should have successfully downloaded a data file into UniSite.

## About the Sumcheck

When the download was completed, the message bar displayed

```
Data transfer complete. Data sum = xxxxxxxx
```

This message tells you two things: first, it tells you that the data transfer completed successfully, and second, it tells you what the sumcheck of the data transferred is. The sumcheck is shown above as *xxxxxxx*.

The sumcheck for memory devices is an eight-digit hexadecimal summation of the data downloaded. If you change one byte of information in the data file, the sumcheck will also change. The sumcheck is a good method of verifying that the data you downloaded matches the data on your host.

Later, when you program this data into a device, UniSite will generate another sumcheck. If the two are the same, then the data programmed is the same as the data downloaded. If the two sumchecks are different, then the data programmed is not the same as the data downloaded.

## Review

In this Session, you learned how to download data to UniSite from a host connected to the Remote port on UniSite. The steps were

- Select the translation format that matched the format of your data file.
- From the Main Menu, press **[M][T][D]** to go to the download screen.
- Set the parameters on the Download screen to match your setup.
- Enter the host Download Host Command. For example, to transfer the file `filename.dat` you would enter `cat filename.dat` for a UNIX-based host. If you are using a VMS-based host, you would enter `type filename.dat`.

## Session 9: Editing Data

In the previous Session, you loaded a data file into UniSite. In this Session, you will learn how to edit that data file.

### Before You Begin

Return to the Main Menu before you begin this Session. Also, you should select a memory device before you begin this Session. See Session 2 for a quick explanation of how to select a device.

### Getting There

The Edit Data command is located on the More Commands menu. Select More Commands/Edit Data from the Main Menu. Finally, select Edit Memory to bring up the Edit Programmer Memory dialog window, which is shown in Figure 4-17.

**Figure 4-17**  
The Edit Programmer  
Memory Screen

FILENAME:                      RAM AVAIL: 128 OF 128KB                      REV: X.XX   Y.YY   Z.Z MANUFACTURER: AMD                      PART #: 27256                      FAMILY/PIN CODE: 0C1 / 032 I/O FORMAT: Intel   Intellec 8/MDS	
EDIT MENU Edit Memory Complement Move data Fill memory	EDIT PROGRAMMER MEMORY Source (RAM, Disk) <input type="checkbox"/> R Edit data word width (4, 8, 16) <input type="checkbox"/> 8 Edit address offset <input type="text"/> 0 Edit begin address <input type="text"/> 0 Return: Execute F1: Main menu                      F2: Prev menu                      F3 or ?: Help

Make sure the parameters are set as they are shown in Figure 4-17, then press ☐. (For an explanation of how to change parameters, refer to the "Changing a Parameter" section of Session 7.) The entire screen clears and the edit screen appears, as shown in Figure 4-18.

**Figure 4-18**  
The Edit Screen

CURSOR AT LOCATION: 00000094                      8 BIT ADDRESSING																	
HEXADECIMAL                      ASCII																	
ADDRESS	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F	0123456789ABCDEF
00000000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	This is an example of some programming data that has been loaded into
00000010	54	68	69	73	20	69	73	20	61	6E	20	20	20	20	20	20	
00000020	65	78	61	6D	70	6C	65	20	6F	66	20	73	6F	6D	65	20	
00000030	70	72	72	67	72	61	6D	6D	69	6E	67	20	20	20	20	20	
00000040	64	61	74	65	20	74	68	61	74	20	20	20	20	20	20	20	
00000050	68	61	73	20	62	65	65	6E	20	6C	6F	61	64	65	64	20	..... ..... .....
00000060	69	6E	74	6F	20	20	20	20	20	20	20	20	20	20	20	20	
00000070	2E	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
00000080	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
00000090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
000000A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	..... ..... .....
000000B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
000000C0																	
000000D0																	
000000E0																	
000000F0																	
^P: Prev block                      ^E: Exchange                      with                      ^U: Restore block ^N: Next block                      ^F: Search pattern                      F2: Exit editor ^D: Delete byte                      ^B: Jump to address                      insert                      Tab: Toggle Hex/ASCII modes ^T: Start/stop																	

### What Does It Say?

The edit screen displays 256 bytes at a time. The four-line reminder bar at the bottom of the screen displays the available commands (no online help is available for this screen). The right third of the screen displays the ASCII translation of the hexadecimal bytes on the left portion of the screen. The top line of the screen displays the address location of the cursor (in hexadecimal) and the addressing mode.

If you haven't already, read the message in the sample data file. As you can see there are some errors that need correcting.

### Moving Around

The cursor starts in the upper-left corner of the hex display. Move the cursor around and watch what happens to the cursor location counter (on the top line of the screen). As you move the cursor, the counter changes to reflect your current location. If you wanted to edit hex data, you would do it in the hex column. But during this Session, you will be editing text, so you should move the cursor to the ASCII side of the screen.

To move to the ASCII side of the screen, press **Tab**. Move the cursor around. Notice that the cursor location counter still changes when you move from one address to another.

### Making Changes

#### Overtyping

With the cursor in the ASCII field, move the cursor to the second **r** in **prrogramming**. Type **o** to correct the spelling mistake. Next, move the cursor to **date** and change it to read **data**.

The previous two corrections were done in overwrite mode: the typed characters replaced the previous characters. The next correction will be done in insert mode.

#### Inserting

To turn on insert mode, press **Ctrl** + **I**. This will light up the insert indicator on the bottom of the screen. With this indicator lit, every character typed will be inserted at the cursor and all following characters will be pushed to the right.

The third and last correction is adding the word **UniSite** before the period below the word **loaded**. Move the cursor on top of the period and type

**UniSite**

## Restoring Your File

If you are not satisfied with your edits and you want to restore the current screen of data, press **Ctrl** + **U** . UniSite restores the current screen of data to the state it was in after the last save.

---

*Note: When you move to another block, all edits are saved.*

## Saving Your Edits

Save your edits if you are satisfied with them. Press **F2** to save your edits and return to the previous menu.

---

*Note: When you exit the Edit screen, or move to another block, all edits are saved. If saving to RAM, there is no way to recall the original data file once you save an edited data file.*

## Review

In this Session, you learned how to edit a data file stored in RAM. To access UniSite's built-in editor, press **M** **E** **E** from the Main Menu. Then, from the Edit Programmer Memory screen, select **R** to edit RAM. Once you are in the editor, you can edit data in either its hex representation or its ASCII representation. Press **Tab** to toggle between the two modes.

The editor defaults to overwrite mode, but it can also operate in insert mode. Press **Ctrl** + **T** to toggle between the two modes.

After making edits to a page of data, you can restore the page to its original condition by pressing **Ctrl** + **U** .

## Session 10: Programming a Memory Device

This Session shows you how to use UniSite to program a memory device.

### Before You Begin

Make sure you have completed Session 1, an introduction to the UniSite interface.

*Note: During this Session, you will program a device with a sample data file stored on the Algorithm disk. Normally, you would want to program a device with data stored in RAM because RAM operations are much faster than disk operations.*

### Can I Use Another Device?

If you do not have an AMD 27256 (the device we are going to use for this Session), then go to the Select Device screen and select the device you are going to program. Keep in mind that the device you select might not have the same capabilities as the AMD 27256. For example, the AMD 27256 supports Electronic ID while the Hitachi 27256 does not.

### Parameter Screens

Select Program Device from the Main Menu. The dialog window displays the Program Memory Device screen, shown in Figure 4-19.

**Figure 4-19**  
The Program Memory  
Device Screen

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER: AMD		PART #: 27256		FAMILY/PIN CODE: 0C1 / 032	
I/O FORMAT: Intel		Intellec 8/MDS			
MAIN MENU		PROGRAM MEMORY DEVICE (non-default)			
Select device	Source (RAM.Disk)	R			
Quick copy	Data word width	8			
Load device	Next device	1			
Program device	Total set size	1			
Verify device	User data size	8000			
More commands	Next operation begins at	0			
		Return: Execute F4: Select mode/options			
		F1: Main menu F2: Prev menu F3 or ?: Help			

Look at the Program Memory Device screen. At the top of the dialog window, you see one of the following:

PROGRAM MEMORY DEVICE (all parameters)

PROGRAM MEMORY DEVICE (non-default)

There are two types of programming parameter screens: simple and complex. UniSite defaults to displaying the simple, Non-default parameters screen.



## What Is the Difference?

Both screens let you change programming parameters. The All Parameters screen contains all the programming parameters supported by the selected device. While the Non-default parameters screen contains a simplified subset of the programming parameters supported by the selected device.

To see the difference between the two screens, press **[F4]**. If you were looking at the Non-default screen, you are now looking at the All Parameters screen. (Likewise, if you were looking at the All Parameters screen, you are now looking at the Non-default screen.) As you can see, there is roughly a 2:1 difference in the number of parameters between the two screens. The All Parameters screen is shown in Figure 4-20.

**Figure 4-20**  
The All Parameters Screen

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER: AMD		PART #: 27256		FAMILY/PIN CODE: 0C1 / 032	
I/O FORMAT: Intel Intellec 8/MDS					
<b>MAIN MENU</b>					
Select device	Source (RAM, Disk)		<b>R</b>	Set auto-increment	
Quick copy	Data word width	<b>8</b>	Illegal bit chk		<b>N</b>
Load device	Next device	<b>1</b>	Blank check		<b>N</b>
<b>Program device</b>	Total set size	<b>1</b>	Compare elec ID		<b>N</b>
Verify device	User data size	<b>8000</b>	Enable yield tally		<b>N</b>
More commands	Next operation begins at	<b>0</b>	Reject option (C,S)		<b>N</b>
	Memory begin address	<b>0</b>	Verify passes (0,1,2)		<b>N</b>
	Device begin address	<b>0</b>			
	Device block size	<b>8000</b>			
Return: Execute		F4: Select mode/options			
F1: Main menu		F2: Prev menu F3 or ? : Help			

## About Parameters

Parameters are user-definable fields that determine what UniSite does. Parameters either qualify or quantify UniSite's actions. Qualifying parameters, such as Illegal Bit Check, control whether or not UniSite performs an operation. Quantifying parameters, such as Block Size, give UniSite a range or variable to use in an operation.

## Which Screen Should I Use?

During the course of normal programming, you usually only need the parameters on the Non-default screen. But if you want to do some more complicated programming operations, you need to change some of the parameters on the All Parameters screen. A complicated programming operation might be if you wanted to program only part of a device.

For this Session, you should be looking at the Non-default screen. If the All Parameters screen is displayed, press **[F4]** to switch to the Non-default screen.

## Set the Programming Parameters

Look at the Non-default parameters screen and set the programming parameters as follows:

- Source - D (disk)
- Filename - sample.bin

When you enter the filename, UniSite searches the disk in the drive for the source data file. When it finds the file, UniSite sets the User Data Size and Memory block parameters according to the data in the data file. When UniSite has set the parameters, it displays the following message in the message bar:

Memory block parameters now set for data file operation

The Program Memory Device screen should now look like the screen shown in Figure 4-21.

**Figure 4-21**  
The Programming Parameters  
for This Session

FILENAME: SAMPLE.BIN		RAM AVAIL: 128 OF 128KB	REV: X.XX Y.YY Z.Z
MANUFACTURER: AMD		PART #: 27256	FAMILY/PIN CODE: 0C1 / 032
I/O FORMAT: Intel Intellec 8/MDS			
- Memory block parameters now set for data file operation.			
MAIN MENU		PROGRAM MEMORY DEVICE (non-default)	
Select device	Source (RAM, Disk)	D	
Quick copy	Filename	SAMPLE.BIN	
Load device	Data word width	8	
Program device	Next device	1	
Verify device	Total set size	1	
More commands	User data size	0	
	Next operation begins at	0	
Return: Execute		F4: Select mode/options	
F1: Main Menu		F2: Prev Menu F3 or ?: Help	

## Programming the Device

Now that you have set the programming parameters, you are ready to program the data file into the device. To begin programming, press **[J]**. After UniSite has programmed the device, the following message appears in the message bar:

OPERATION COMPLETE: Sumcheck = xxxxxxxx

where xxxxxxxx represents is the 8-digit sumcheck of the data programmed into the device in the socket.

## Review

When you select Program Device from the Main Menu, you see one of two parameter-entry screens: the simple Non-default screen or the complex All Parameters screen. Press **[F4]** to toggle between the two parameter-entry screens.

When you have entered the programming parameters, press **[J]** to begin the programming. When UniSite is finished programming, it displays an 8-digit sumcheck of the data programmed into the device. (UniSite displays a 4-digit sumcheck when you program a logic device.)

## Session 11: Verifying a Device

Once you have programmed a device, you can perform a number of different device checks and programming tests on the device. For the rest of this Session we will refer to device checks and programming tests as verify operations.

*Note: During this Session, you will verify a device with a data file stored on the Algorithm disk. Normally, you would want to verify a device with data stored in RAM because RAM operations are much faster than disk operations.*

### Before You Begin

Make sure you have completed Session 1, an introduction to the UniSite interface. Also make sure you have completed Session 9, which covers programming a device.

### Can I Use Another Device?

If you do not have an AMD 27256 (the device we are going to use for this Session), then go to the Select Device screen and select the device you are going to program. Keep in mind that the device you select might not have the same capabilities as the AMD 27256. For example, the AMD 27256 supports Electronic ID while the Hitachi 27256 does not.

### Parameter Screens

Select Verify Device from the Main Menu. The dialog window displays the Verify Memory Device screen, shown in Figure 4-22.

**Figure 4-22**  
The All Parameters Verify Screen

FILENAME:		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER: AMD		PART #: 27256		FAMILY/PIN CODE: 0C1 / 03Z	
I/O FORMAT: Intel Intellec 8/MDS					
-					
MAIN MENU	VERIFY MEMORY DEVICE (all parameters)				
Select device	Source (RAM, Disk)	<input checked="" type="checkbox"/>	Set auto-increment		
Quick copy	Data word width	8	Compare elec ID <input checked="" type="checkbox"/>		
Load device	Next device	1			
Program device	Total set size	1			
Verify device	User data size	8000			
More commands	Next operation begins at	0			
	Memory begin address	0	Verify passes (1,2) <input checked="" type="checkbox"/>		
	Device begin address	0			
	Device block size	8000			
Return: Execute		F4: Select mode/options			
F1: Main Menu		F2: Prev Menu F3 or ?: Help			

Look at the Verify Memory Device screen. At the top of the dialog window, you see one of the following:

VERIFY MEMORY DEVICE (all parameters)

VERIFY MEMORY DEVICE (non-default)

As with the programming parameters screens, the parameter screens let you change programming parameters. The All Parameters screen contains all the verify parameters supported by the selected device. While the Non-default parameters screen contains a simplified subset of the verify parameters supported by the selected device.

## Which Should I Use?

During the course of verifying a device, you will usually need only the parameters on the Non-default screen. But if you want to do some more complicated verify operations, you will need to change some of the parameters on the All Parameters screen. A complicated verify operation might involve, for instance, verifying only part of a device.

For this Session, you should be looking at the Non-default screen. If the All Parameters screen is displayed, press **[F4]** to switch to the Non-default screen, which is shown in Figure 4-23.

**Figure 4-23**  
The Non-default Verify Parameters Screen

FILENAME: SAMPLE.BIN		RAM AVAIL: 128 OF 128KB		REV: X.XX Y.YY Z.Z	
MANUFACTURER: AMD		PART #: 27256		FAMILY/PIN CODE: 0C1 / 032	
I/O FORMAT: Intel Intellec 8/MDS					
- Memory block parameters now set for data file operation.					
MAIN MENU			VERIFY MEMORY DEVICE (non-default)		
Select device	Source (RAM, Disk)				
Quick copy	Filename				
Load device	Data word width				
Program device	Next device				
Verify device	Total set size				
More commands	User data size				
	Next operation begins at				
	Return: Execute	F4: Select mode/options			
	F1: Main Menu	F2: Prev Menu	F3 or ? : Help		

## What Happens When I Change Parameters?

Look at the User data size field. If you just completed Session 10: Program a Memory Device, then this field should be set to C0. Normally, User data size defaults to the size of the selected device. But if you have performed a previous device operation, UniSite sets this value, and other values, to the parameters specified in the previous device operation. Other parameters affected are Block Size and Begin Address.

## Setting the Verify Parameters

If you just completed the previous Session, Program a Memory Device, and then continued immediately with this Session, you probably do not need to set any parameters. But, to be sure, check the parameters shown in Figure 4-23 against the parameters you see on your UniSite.

*Note: Remember that the displays may look different if you are using a device other than an AMD 27256.*

## Verifying the Device

Now that you have set the verify parameters, you are ready to verify the data programmed into the device.

To begin the verify, press **[J]**. If the verify operation completes successfully, the following message is displayed in the message bar:

OPERATION COMPLETE: Sumcheck = xxxxxxxx

where xxxxxxxx represents is the 8-digit sumcheck of the data in the device.

## Review

When you select Verify Device from the Main Menu, you see one of two parameter-entry screens: the simple Non-default screen or the complex All Parameters screen. Press **F4** to toggle between the two parameter-entry screens.

When you have entered the verify parameters, press **↵** to begin the verify.

When UniSite is finished verifying, it displays an 8-digit sumcheck of the data in the device. (UniSite displays a 4-digit sumcheck when you verify a logic device.)

# 5 *Commands*

---

This chapter describes the commands you can access from UniSite's menus.

---

## Menu Organization

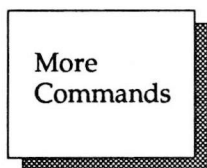
The interrelation of UniSite menus and commands is shown in the command tree in Figure 5-1.

### Menu Maps

Each command description includes a map, part of the command tree representing your location and showing you the path to the command.

The maps, read from left to right, are comprised of three or four boxes, each representing a screen type, as described below.

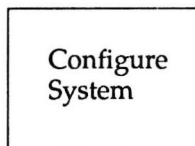
#### Shaded Box



#### Main Menu Screen

A shaded box represents a top-level command, either a Main Menu command or the More Commands menu. These are the most frequently used commands. The shaded box is the start of your path to a particular command.

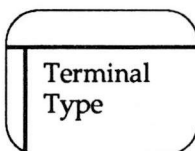
#### Box



#### Other Menu Screens

The next step on the path to a command is a box, representing all other menu screens, most of which are accessible from the More Commands screen. When you select an item in a box, a T-box item or another screen is displayed.

#### T-Box

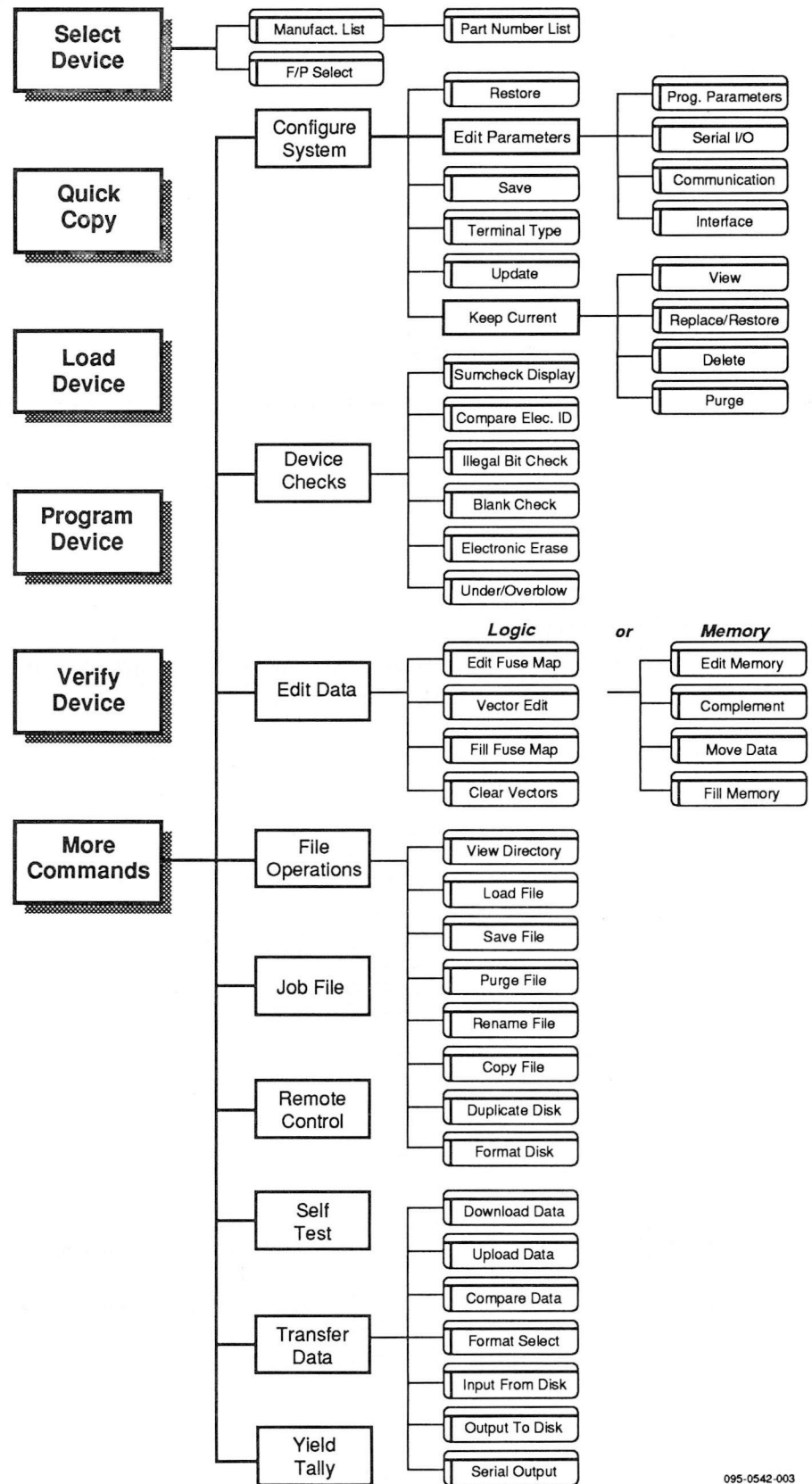


#### Dialog Window Screen

Selecting the item shown in a T-box brings you to your final destination, a dialog window.

Figure 5-1  
The Command Tree

Main Menu Selections



095-0542-003

## Overwriting User RAM

The following operations use User RAM as a temporary storage buffer, overwriting any data that may have been there previously.

- Load device to disk file
- Program device from disk file
- Verify device from disk file
- Illegal Bit Check to disk file
- Underblow to disk file
- Duplicate disk
- Copy file
- Upload data from disk file
- Output data to disk from disk file
- Serial output from disk file
- Input data from disk to disk file
- Download data to disk file
- Compare data to disk file
- Self-Test User RAM
- Update Device Algorithms/Install Device Libraries

## Factory Default Settings

UniSite's system parameters are initialized to certain settings at the factory. You can restore these factory defaults at any time by selecting configuration file number 0 from the More Commands/Configure System/Restore menu. From the Restore System Parameters menu, press **[0]** **[ ]** to re-elect the factory settings. The power-up defaults (configuration file number 1) are the same as the factory defaults when the unit is shipped from Data I/O.

Parameter	Factory Default Setting
Algorithm Source	D
Blank Check	Yes
Continuity Check	Yes
Compare Electronic ID	Yes
Data source/destination	RAM
Data Word Width	8
Device Begin Address	0
Device Block Size	1000
Enable download echo	No
Enable security fuse	No
Enable special data	No
Enable terminal beep	Yes
Enable yield tally option	No
EE bulk erase option	No
EOF delimiter flag (download)	No
EOF delimiter flag (upload)	No
Family code	(no default)
File delimiter character (download)	1A (Ctrl-Z)



Parameter	Factory Default Setting
File delimiter character (upload)	1A (Ctrl-Z)
Filename	Blank
Fill RAM before downloading	No
Fill RAM with data (00 to FF)	00
High speed download	Yes
Host command (download)	Blank
Host command (upload)	Blank
Illegal Bit Check	Yes
Instrument control code (0,1,2)	0
I/O Address Offset	FFFFFFF
I/O translation format	0 (no default)
I/O timeout	30 seconds
JEDEC I/O translate DIP/LCC option	Yes
Logic verification (all, fuse, vector)	All
Main menu job files	No
Manufacturer	Blank (no default)
Memory Begin Address	0
Number of lines between form feeds	0
Number of nulls	0
Odd/Even Byte Swap	No
Part number	(no default)
Pinout code	(no default)
Power on CRC mode	No
Program security fuse	No
RAM Device Selection	No
Reject option (commercial or single)	Commercial
Remote Off code	0
Remote On code	0
Remote serial port configuration	9600 baud, 8 data bits, no parity, 1 stop bit, active CTS/DTR
Security Fuse Data (0 or 1)	0
Serial set auto increment flag	No
Simple/complex parameter screen	Simple
Terminal serial port configuration	9600 baud, 8 data bits, no parity, 1 stop bit, active CTS/DTR
Terminal type	VT-100
Transmit pacing	0
User Menu Port *	T
User Data Size	0
Upload wait	0 seconds
Upload destination/download source	Remote
Upload record size	16
Verify Data Format	Hex
Verify Passes	2

\* This parameter can be saved with the Save System Configuration command and is read at power-up, but this parameter is not restored when a Restore System Configuration is performed.

---

## Select Device

Before you can perform any device-related operations with UniSite, you must select the device you are using. Selecting a device is a two-step process: first, select the device manufacturer and second, the device part number. The two-step process is the same whether you are selecting a standard device or a device supported by a Keep Current algorithm.

You can bypass the manufacturer/part number selection process by entering the family/pinout code directly. For more information, see the section titled "Family/Pinout Code Select Screen."

---

**CAUTION:** *Be sure you enter the proper family and pinout codes for the device you are using. If you enter an incorrect family and pinout code, you may damage your device.*

*Be aware that although you may enter an independently valid family code and an independently valid pinout code, a combination of the two may be invalid (illegal).*

*Family/pinout combinations not contained in UniSite device list are considered illegal. Data I/O assumes no responsibility or liability for results produced by entry of illegal family/pinout combinations.*

When you have selected a manufacturer and device, UniSite will return to the Main Menu. The manufacturer and part number of the device you selected will appear in the status window. At this point, you will see only screens related to the type of device you selected. For example, if you choose a logic device, you will see only screens that are required to load, program, edit, and verify a logic device.

Also, some devices support special functions, such as the Program Signature and XNOR table. If the device you select supports a particular function, parameter entry fields associated with that function are displayed.

### Before You Select a Device

If you are using a new version of software (i.e., you received an update) for the first time, you must perform the Update operation prior to selecting a device command. See the description of the Update command in Chapter 5 for more information.

If you select a device before properly updating a new version of software, UniSite displays the following message

Error: Software security violation

See the description of the Update command later in this chapter for more information on updating your new version of software.

---

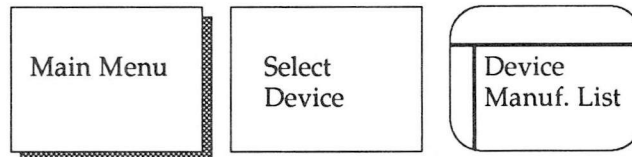
**Note:** *You do not have to run the Update command on an "out of the box" UniSite. However, you do need to run the Update command on any subsequent updates to the software.*

## Selecting a Standard Device Algorithm

This section describes how to select a standard device algorithm. (A standard device is a device that is supported by the algorithms included on the UniSite Algorithm disk.) For information on selecting a device supported by a Keep Current algorithm, see the section titled "Selecting a Keep Current Algorithm."

### Manufacturer List

The Manufacturer List screen displays a list of device manufacturers supported by UniSite.



To select the device manufacturer you are using, do the following:

1. Press **[S]** from the Main Menu. The Manufacturer List screen appears.

The upper-right corner of the Manufacturer List screen displays how many screens (pages) of manufacturers there are and what page you are on.

2. Set the Device Type filter to the appropriate setting for the device you are using. As the names indicate, Logic Only displays only logic devices, Memory & Emicros displays memory and emicros, and All displays all device types.

Press **[Space]** to cycle through the filter types. The list of manufacturers displayed will change based on your choice.

3. Set the Mode field to reflect the type of programming you will be doing. Press **[Space]** to cycle between Single and Gang/Set. The Mode field appears only if the Device Type is set to All or Memory & Emicros.
4. Locate the manufacturer of the device you are going to use and enter the number appearing next to that manufacturer.

Press **[Ctrl] + [N]** to display the next page of manufacturers. Press **[Ctrl] + [P]** to display the previous page of manufacturers. When the screen repaints, you see the next (or previous) list of manufacturers.

When you select a device manufacturer, UniSite displays the Part Menu for the selected manufacturer.

### Device Part Number List

The Part Menu screen displays all the devices made by the selected manufacturer that UniSite supports.



To select a device, do the following:

1. Locate the device part number you are going to use and enter the number appearing to the left of that device and press **[J]**.

If you do not see the device you are looking for, press **[Ctrl] + [N]** to advance to the next page of the device list. Press **[Ctrl] + [P]** to display the previous page of devices.

After you have selected the device, UniSite returns to the Main Menu and the status window is updated to show the device you have selected.

### Accessing Device-Specific Online Information

After you have selected a device, UniSite displays the following message in the message bar if there is online device-specific information for the selected device.

Hit F3 or ? to view device specific message.

To view the online information, press **[F3]** or **[?]**. The screen clears and UniSite displays the device-specific information. If there is more than one screen of device specific information, press **[Ctrl] + [N]** to view the next screen of information. Press **[Ctrl] + [P]** to view the previous screen of information. Exit the screen as you would any help screen.

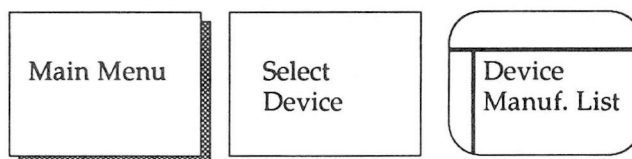
## Selecting a Keep Current Algorithm

This section describes how to select a device that is supported by a Keep Current algorithm. A Keep Current algorithm gives you support for new device algorithms and updated device algorithms much earlier than the support is available via standard quarterly update kits.

For more information on the Keep Current Express service, see either the brief description in the Options section of Chapter 1, or the full description in the Keep Current documentation located behind the Keep Current tab in this binder.

### Manufacturer List

The Manufacturer List screen displays a list of device manufacturers supported by UniSite.



To select a Keep Current algorithm, do the following:

1. From the Main Menu, press **[S]** to display the Manufacturer List screen.

The upper-right corner of the Manufacturer List screen displays how many screens (pages) of manufacturers there are and what page you are on.

2. Insert the disk that contains the Keep Current algorithms in drive B. If you have a single-drive UniSite, insert the disk in drive A.
3. Locate the KEEP CURRENT entry on the Manufacturer List screen. Type in the number appearing beside the KEEP CURRENT entry and press **[J]**. The Keep Current Part List screen will appear.

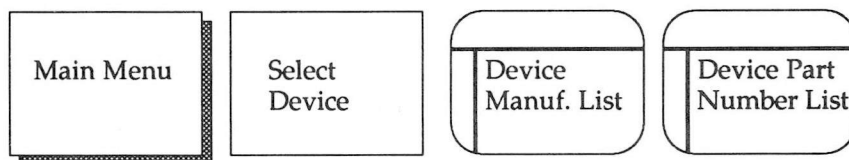
If you do not see the KEEP CURRENT entry, press **[Ctrl] + [N]** to display the next page of manufacturers. Press **[Ctrl] + [P]** to display the previous page of manufacturers. When the screen repaints, you see the next (or previous) list of manufacturers.

---

*Note: UniSite will display an information screen if it does not locate any Keep Current algorithms.*

## Keep Current Part List

The Keep Current Part List screen displays all the valid Keep Current algorithms UniSite finds on the disk(s) in the drive(s). See the "Keep Current Algorithms and Software Updates" section of Chapter 4 for a description of valid and invalid Keep Current algorithms.



To select a particular Keep Current algorithm, do the following:

1. Locate the device you are going to use and enter the number appearing to the left of that device and press **↓**. UniSite displays the Keep Current algorithms in the order that they are found.

---

*Note: UniSite displays only those Keep Current algorithms that are compatible with the installed version of system software. For more information, see the section in Chapter 4 titled "Keep Current Algorithms and Software Updates."*

If you do not see the Keep Current algorithm for the device you are looking for, press **Ctrl** + **N** to display the next page of the device part number list. Press **Ctrl** + **P** to display the first page of devices.

If you still do not see the device you are looking for, and you know you have downloaded a Keep Current algorithm for that device, make sure the disk with the Keep Current algorithms is in the disk drive. If you insert a new disk, return to the Main Menu and go back to step 1.

After you have selected the device, UniSite returns to the Main Menu and the status window is updated to show the device you have selected.

## Selecting a Device with a Family/Pinout Codes

A family/pinout code identifies a device by its characteristics rather than by its manufacturer/part number. Thus, several 27128 DIP EPROMs can share the same family/pinout code.

Selecting a device by manufacturer/part number tells UniSite the exact device you are using. Selecting a device by family/pinout code does not always point to a single, specific device.

Be aware that several devices can share the same family/pinout code. Because these devices do not always share the same characteristics, some device checks will not be performed if you select a device using family/pinout codes. Thus, if you want specific device checks to be performed, you should select the device by manufacturer/part number.

---

**CAUTION:** *Be sure you enter the proper family and pinout codes for the device you are using. If you enter an incorrect family and pinout code, you may damage your device.*

*Be aware that although you may enter an independently valid family code and an independently valid pinout code, a combination of the two may be invalid (illegal).*

*Family/pinout combinations not contained in UniSite device list are considered illegal. Data I/O assumes no responsibility or liability for results produced by entry of illegal family/pinout combinations.*

Family/pinout codes are listed in UniSite's device list. A new device list is shipped with each new software update.

To select a device by family/pinout codes, do the following:

1. Choose Select Device from the Main Menu. The Device Manufacturer list appears.
2. Examine the list of device manufacturers. Find the FAM/PINCODE entry. Type in the number to the left of the FAM/PINCODE entry and press ☐. The screen clears and displays the Family/Pinout Code screen.
3. Type the two- or three-digit family code for the device you want to program. Move the cursor with the arrow keys to the Pinout Code field.
4. Type the two- or three-digit pinout code for the device you want to program. Press ☐ twice.

If UniSite cannot find the Algorithm disk, this message appears in the message bar:

Cannot access system file. Insert algorithm disk

Insert the Algorithm disk and press ☐.

5. UniSite begins loading the selected algorithm. If the algorithm is found, you are returned to the Main Menu.

If the algorithm is not found, UniSite displays the following message in the message bar:

Device algorithm not found

and you remain in the Family/Pinout Code select screen. At this point, you can get back to the Main Menu by pressing **F1**.

---

*Note: If you get a recurring Device Insertion Error or Device ID Error with a device selected using family/pinout codes, use the Manufacturer List/Device Number screens to select the device.*

---

## Cross Programming

Cross programming allows a single generic programmable logic device (PLD) to be configured as any one of many PLD architectures. Consequently, the generic device can take on the function of many subset devices. The term generic PLD is used to identify the superset device, such as a 16V8 generic PLD, which can be configured as a 16R4, 16R8, or a 16L8.

The generic PLD and the subset devices it can support are not restricted to the same manufacturer. For example, a 16V8 generic PLD from manufacturer A can be programmed using a fuse pattern originally designed for a 16L8 from manufacturer B. The cross-programming feature allows you to avoid recompiling source code for the generic PLD if the appropriate fuse pattern is available for a subset part.

To view the subset devices, select a manufacturer with the **XPGM** extension. This screen lists all devices that can be replaced by the generic PLD of the selected manufacturer.

After selecting a device with the **XPGM** extension, load the fuse map of the subset PLD into User Memory, by using either a Load From Device operation or a Download of a JEDEC file.

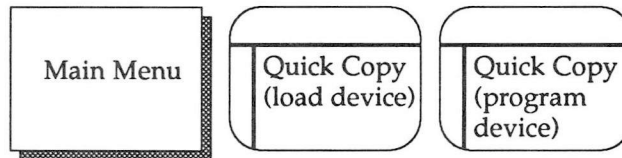
Select a manufacturer with an **XPGM** extension and press **↓**. Then, from the Part Menu for Manufacturer screen, select the appropriate device, such as **16V8 as 16L8** if a 16L8 fuse map has been loaded and a 16V8 generic PLD is to be programmed. After making your selection, press **↓** and the Main Menu appears. Select the Program Devices screen and 16V8 as 16L8 will be displayed in the PART # field at the top of the screen. Insert the 16V8 and press **↓**. The 16V8 is programmed as a 16L8.



---

## Quick Copy

The Quick Copy command allows you to load data from a master device and program that device data into a target device quickly and easily.



---

*Note: Before you use the Quick Copy command, you must first select a device.*

To use the Quick Copy command, follow these steps:

1. Select the device that contains the data you are going to load. For more information, see the explanation of the Select Device command earlier in this chapter.
2. Select the Quick Copy command by pressing **[Q]** from the Main Menu. The dialog window displays the Quick Copy screen. The message bar displays the following message:

Insert master device. Hit return.

3. Insert the master device and lock it into place.
4. Press **[J]** to begin loading the master data into RAM. When the data in the master device has been loaded, UniSite displays

OPERATION COMPLETE. Sumcheck = xxxxxxxx Hit return

---

*Note: If you are using the Quick Copy function with SetSite, you must press Return again at this point. This allows you time to review the screen and sumcheck information.*

5. Remove the master device and press **[J]**. UniSite displays
- Insert blank device. Hit return.
6. Insert the target device (the device you want to program) and lock it into place.
  7. Press **[J]** to program the device.
  8. When the programming operation is complete, UniSite displays
- OPERATION COMPLETE. Sumcheck = xxxxxxxx Hit return
9. The Quick Copy operation is complete. Remove the device.
  10. To program another device, return to step 6.

---

*Note: You may also use the Quick Copy to load data for gang programming, if you are using the SetSite module. Data Word Width will automatically be set to Device Word Width.*

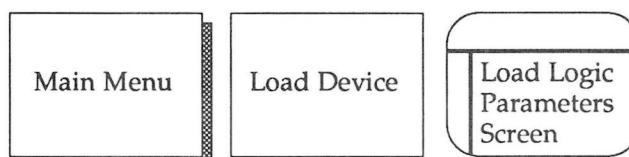
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## Load Device

The Load Device command allows you to copy data from a master device into either a disk file or into RAM. Depending on whether you select a logic or memory device, either the Load Logic Device screen or the Load Memory Device screen will appear when you select this command. The Load Logic Device command is explained first, and the Load Memory Device command is explained after that.

### Load Logic Device

If you select a logic device and then select the Load Device command, the Load Logic Device menu will appear.



To load user memory with data from a logic device, follow these steps:

1. Select and socket a logic device.
2. Select Load Device from the Main Menu. The Load Logic Device screen appears.
3. Specify the parameters you want and press  to begin the loading.
4. When the load operation is complete, UniSite displays the following message in the message bar:

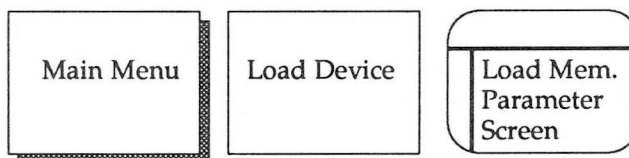
```
OPERATION COMPLETE. Sumcheck = xxxx
```

The available parameters are described below.

- **Destination (R,D)** — Specifies the destination for the fuse data you will be loading. Press  to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the name of the disk file where you want the data to be saved. This option appears only if you specify disk as the Destination. The filename must follow standard DOS conventions, and may contain a drive designator. An example of a valid filename is b:16r8.dat.

## Load Memory Device

If you select a memory device and then select the Load Device command, the Load Memory Device menu will appear.



To load user memory with data from a memory device, follow these steps:

1. Select and socket a memory device.
2. Select Load Device from the Main Menu. The Load Memory Device screen appears.
3. Specify the parameters you want. Then, press ☐ to begin the loading.
4. When the load operation is complete, UniSite displays the following message in the message bar:

OPERATION COMPLETE. Sumcheck = xxxxxxxx

The following parameters can be specified on the Load Memory Device screen:

- **Destination (R,D)** — Specifies the destination for the data you will be loading. Press ☐ to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the name of the disk file where you want the fuse data to be saved. This option appears only if you specify disk as the Destination. The filename must follow standard DOS conventions, and may contain a drive designator. An example of a valid filename is b:27256.dat.
- **Data Word Width** — Sets the word width of data to be loaded. For 8-bit (or larger) devices, the minimum word width is equal to the device width, and the maximum word width is 64. For 4-bit devices, your word width choices are 4, 8, 16, and 32. This value should match the data bus word width in the target system for the device being programmed. The default value is the device word width.
- **Next Device** — Designates the next device (next set member) in the set. For example, if you are using 8-bit devices and have specified a word width of 16 bits on the Load Memory Device screen, it requires two devices to store each 16-bit word. Typing ☐ for the next set member directs UniSite to load the first device in the set at even-address bytes of the memory block. Typing ☐ directs UniSite to load the second device at odd address bytes of the memory block.

- **Total Set Size** — Specifies how many virtual devices are in the set for device operations. For example, if you are loading 16-bit wide data from two 8-bit wide devices, your virtual device still equals one (one 16-bit virtual device). Any number between 1 and 99 can be entered. Automatic Set Size calculation will be attempted when any of the following parameters are changed: Device width, Data Word Width, Device Block Size or User Data Size. Total Set Size can be defined by the following equation:

$$\text{TOTAL SET SIZE} = \frac{\text{USER DATA SIZE}}{\text{DEVICE BLOCK SIZE} \left( \frac{\text{DATA WORD WIDTH}}{\text{DEVICE WIDTH}} \right)}$$

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- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block used to load from the device to the destination. This value is normally equal to the device size or to a multiple of the device size for loading a set. If 0 or a value less than the device size is entered, it is reset to the device size for the load. User Data Size works with Total Set Size to determine the total amount of bytes to load from a set of devices.
- **Next Operation Begins At** — This read-only parameter shows where in user memory the next data byte will be loaded. This value is calculated from the Data Word Width, Device Block Size, Memory Begin Address, device width, and next set member parameters.

### Optional Parameter Screens

There are two types of parameter-entry screens: simple and complex. UniSite defaults to displaying the simple, Non-default Parameters screen. If you want to view the complex, All Parameters screen, press **[F4]** from the Non-default Parameters screen. If you have changed any of the default parameters, those changed parameters will also show up on the Non-default Parameters screen.

The following parameters are found on the complex, all parameters Program Memory Device screen:

- **Memory Begin Address** — Specifies the first address, in hex, where the first byte of data is loaded from a device. If the destination is RAM, it is a beginning RAM address. If the destination is Disk, it is a beginning disk file address. The Memory Begin Address must be an even address if you have selected a 16-bit device. The default address is 0.
- **Device Begin Address** — Specifies the first hex master device address that will be loaded. The default value is 0.
- **Device Block Size** — Specifies the size, in hex, of device data used in device operations. After selecting a device, the Device Block Size is set automatically to the device size and normally does not need to be changed. Also, Device Block Size is set to a smaller value if the Device Begin Address is nonzero. This parameter can be changed if desired. Entering a zero sets the Device Block Size equal to the device size.

- **Set Auto-increment** — This option, used in serial set mode, automatically directs UniSite to the next block in the set that is to be loaded. For example, if you have four 1K x 8 devices to load into a 4K x 8 block of memory, using the auto-increment option directs UniSite to point to the first memory address of the next 1K block after each device had been loaded. For single device operations, this feature should be disabled and the Next Device parameter should be set to 1.

*Note: Items with an \* (asterisk) are visible on the screen only if the selected device supports the feature.*

- \* **Compare Electronic ID (Y,N)** — Compares the electronic ID of the socketed device against the electronic ID of the selected algorithm.
- \* **Odd/Even Byte Swap (Y,N)** — When enabled, allows the Most Significant Bytes (MSB) and the least significant bytes (LSB) of 16-bit words to be swapped when data is loaded from a 16-bit device. When disabled, the data from a 16-bit device is loaded into User RAM with the MSB stored at an odd memory address. When enabled, the MSB is stored at an even memory address.

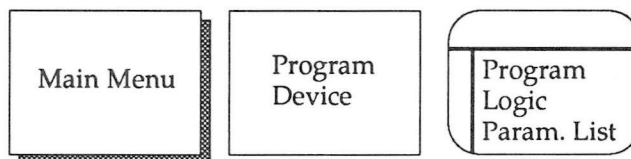
## Program Device

The Program Device command allows you to copy data from RAM or from disk into a blank device. Depending on whether you select a logic or memory device, either the Program Logic Device screen or the Program Memory Device screen appears when you select this command. The Program Logic Device command is explained first, and the Program Memory Device command is explained next.

Before you can program a device, you need to load the programming data into RAM or select a disk file as your data source.

### Program Logic Device

If you select a logic device and then select the Program command, the Program Logic Device menu appears.



To program a logic device, follow these steps:

1. Select and socket a logic device.
2. Select Program Device from the Main Menu. The Program Logic Device screen appears.
3. Specify the parameters you want. Then press  to begin the programming.

4. When the programming is complete, UniSite displays the following message in the message bar:

OPERATION COMPLETE. Sumcheck = xxxx

The following parameters can be specified on the Program Logic Device screen.

- **Source (R,D)** — Specifies the source of the fuse data and test vectors that you wish to use. Press **[Space]** to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the name of the file you want as your data source. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and may contain a drive designator. An example of a valid filename is **b:16r8.dat**.
- **Security Fuse Data (0,1)** — To program the security fuse, set this parameter to 1 and set the Program Security Fuse parameter to Y. This parameter defaults to 0, which disables programming of the security fuse.
- **Program Security Fuse (Y,N)** — Enables or disables the programming of the security fuse. To program the security fuse, set this parameter to Y and set the Security Fuse Data parameter to 1. This parameter defaults to N, which disables programming of the security fuse.

### Optional Parameter Screens

There are two types of parameter-entry screens: simple and complex. UniSite defaults to displaying the simple, Non-default Parameters screen. If you want to view the complex, All Parameters screen, press **[F4]** from the Non-default Parameters screen. If you have changed any of the default parameters, those changed parameters will also appear on the Non-default Parameters screen.

The following parameters are found on the complex, all parameters Program Logic Device screen.

- **Illegal Bit Check (Y,N)** — Enables or disables the illegal-bit test. When enabled, this test compares data in a device against data in UniSite's RAM to determine if the device has already-programmed locations of incorrect polarity. For example, UniSite returns an illegal-bit error in the following situation: data in RAM indicates a specific bit should be in an unprogrammed state while the corresponding bit in the device is in a programmed state. The device cannot be programmed if UniSite detects an illegal bit. This parameter is enabled by default.
- **Blank Check (Y,N)** — Enables or disables the blank check test. A Blank Check test checks a device for programmed bits. This parameter defaults to Y, which enables the test.

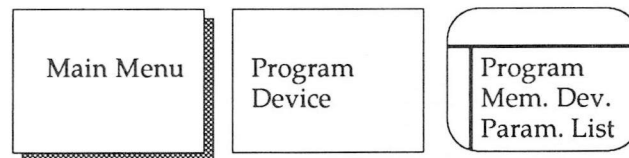
- **Enable Yield Tally (Y,N)** — When enabled, directs UniSite to keep a running tally of the programming yields for the last sixteen types of devices programmed. These totals show how many devices passed and failed, and what specific errors, if any, have occurred. This parameter defaults to N, which disables the test. A more complete description of this feature can be found in the "Yield Tally" section of this chapter.
- **Logic Verification (A,F,V)** — Specifies the type of logic verification to perform after programming. Select from Fuse Verification F, Vector Verification V, or All A. Fuse Verification checks the fuse pattern programmed into the device with the pattern in UniSite's memory. Vector Verification functionally tests the device, using structured test vectors stored in memory. A directs UniSite to perform both fuse verification and vector verification. Press **Space** to step through the three choices. This parameter defaults to A.

UniSite does not support vector testing for logic devices with more than 84 pins. Attempting to perform a vector test on a device with more than 84 pins will yield the following message:

```
OPERATION COMPLETE. Sumcheck = hhhhhhhh (Vector test
not supported)
```

- **Verify Passes (0,1,2)** — Selects the number of times to test the device. 0 directs UniSite not to test the device. 1 directs UniSite to test the device once at the device manufacturer's nominal Vcc. 2 directs UniSite to verify the device at the device manufacturer's recommended high and low Vcc levels. This parameter defaults to 2.
- **Reject Option (C,S)** — Selects the number of times the device is pulsed with programming voltage before it is rejected as unprogrammable. C selects the number of pulses specified by the manufacturer. S selects either a one-pulse or the military-specification number of programming pulses. Unless you are programming devices to a strict military specification, you should leave this option set at C. This option defaults to C.

## Program Memory Device



If you select a memory device and then select the Program command, the Program Memory Device screen appears.

To program a memory device, follow these steps:

1. Select and socket a memory device.
2. Select Program Device from the Main Menu. The Program Memory Device screen appears.
3. Specify the parameters you want. Then press **↵** to begin the programming.



4. When the programming is complete, UniSite displays the following message in the message bar:

```
OPERATION COMPLETE. Sumcheck = xxxxxxxx
```

The following parameters can be specified on the Program Memory Device screen.

- **Source (R,D)** — Specifies the source for the data to program into the device. Press **Space** to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the file you want as your data source. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and may contain a drive designator. An example of a valid filename is **b:27512.dat**.
- **Data Word Width** — Sets the word width of the data to be programmed. For 8-bit (or larger) devices, the minimum word width is equal to the device width and the maximum is 64. For 4-bit devices, your word width choices are 4, 8, 16, and 32. This value should match the data bus word width in the target system for the device being programmed.
- **Next Device** — Designates the next device in the set. For example, if you are using 8-bit devices and have specified a word width of 16 bits on the Program memory device screen, it requires two devices to store each 16-bit word. 1 directs UniSite to program the first device in the set with even-numbered addresses of the memory block. 2 directs UniSite to use odd-numbered addresses.
- **Total Set Size** — Specifies how many virtual devices are in the set for device operations. For example, if you are programming 16-bit wide data into two 8-bit wide devices, your virtual device still equals one (one 16-bit virtual device). You can enter any number between 1 and 99. Automatic Set Size calculation is attempted when you change any of the following parameters: Device width, Device Block Size or User Data Size. Total Set Size is defined by the following equation:

$$\text{TOTAL SET SIZE} = \frac{\text{USER DATA SIZE}}{\text{DEVICE BLOCK SIZE} \left( \frac{\text{DATA WORD WIDTH}}{\text{DEVICE WIDTH}} \right)}$$

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- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block to program into a device. Normally, this value is equal to the device size or to a multiple of the device size for set programming. Entering 0 sets the User Data Size to the device size. User Data Size works with Total Set Size to determine the total amount of bytes to program into a set of devices.
- **Next Operation Begins At** — This read-only parameter shows what address in user memory contains the next data byte to be programmed. This value is calculated from the Data Word Width, Device Block Size, Memory Begin Address, device width, and next set member parameters.



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*Note: Items with an \* (asterisk) are visible on the screen only if the selected device supports the feature.*

- \* **Security Fuse Data (0,1)** — To program the security fuse, set this parameter to 1 and set the Program Security Fuse parameter to Y. This parameter defaults to 0, which disables programming of the security fuse.
- \* **Program Security Fuse (Y,N)** — Enables or disables the programming of the security fuse. To program the security fuse, set this parameter to Y and set the Security Fuse Data parameter to 1. This parameter defaults to N, which disables programming of the security fuse.
- \* **Program Signature** — Available on only a few devices, the program signature is a user-definable field that allows the user to program data into the program signature array.
- \* **Software Data Protection (Y,N)** — When enabled, prevents writing to a device.

## Optional Parameter Screens

There are two types of parameter-entry screens: simple and complex. UniSite defaults to displaying the simple, Non-default Parameters screen. If you want to view the complex, All Parameters screen, press **[F4]** from the Non-default Parameters screen. If you have changed any of the default parameters, those changed parameters will also appear on the Non-default Parameters screen.

The following parameters are found on the complex, all parameters Program Memory Device screen.

- **Memory Begin Address** — Specifies the first address, in hex, of the first byte of data to be programmed. For a SetSite operation, Memory Begin Address specifies the first address of the device in the first socket. If the Source is RAM, it is a beginning RAM address. If the Source is Disk, it is a beginning disk file address. The Memory Begin Address must be an even address if you have selected a 16-bit device. The default address is 0.
- **Device Begin Address** — Specifies the first hex device address that will be programmed. The default is 0.
- **Device Block Size** — Specifies the size, in hex, of device data used in device operations. At device selection, Device Block Size is set to the device size and normally does not need to be changed. It is also automatically set to a smaller value if the Device Begin Address is nonzero. This parameter can be changed if desired. Entering zero sets the Device Block Size equal to the device size.
- **Set Auto-increment** — When enabled, directs UniSite (in serial set programming mode) to the starting memory address of the next block in the set to be programmed. For example, if you have four 1K x 8 devices to program from a 4K x 8 block of data, using the auto-increment option directs UniSite to point to the first address of the next 1K block after each device has been programmed. For single device operations, this feature should be disabled and the Next Device parameter should be set to 1.

---

*Note: Items with an \* (asterisk) are visible on the screen only if the selected device supports the feature.*

- \* **Illegal Bit Check (Y,N)** — Enables or disables the illegal-bit test. This test compares data in a device against data in UniSite's RAM to determine if the device has already-programmed locations of incorrect polarity. For example, UniSite returns an illegal-bit error in the following situation: data in RAM indicates a specific bit should be in an unprogrammed state while the corresponding bit in the device is in a programmed state. The device cannot be programmed if UniSite detects an illegal bit. This parameter is enabled by default.
- **Blank Check (Y,N)** — Enables or disables the blank check test. A Blank Check test checks a device for programmed bits. This parameter defaults to Y, which enables the test.
- \* **Compare Electronic ID (Y,N)** — When enabled, compares the electronic signature of the device against the electronic signature of the selected algorithm.
- **Enable Yield Tally (Y,N)** — When enabled, directs UniSite to keep a running tally of the programming yields for the last sixteen types of devices programmed. These totals show how many devices passed and failed, and what specific errors, if any, occurred. This parameter defaults to N, which disables the test. A more complete description of this feature can be found in the "Yield Tally" section of this chapter.
- \* **Odd/Even Byte Swap (Y,N)** — When enabled, allows the Most Significant Bytes (MSB) and the Least Significant Bytes (LSB) of 16-bit words to be swapped when data is programmed into a 16-bit device. The data is programmed into a device retrieving the Most Significant byte from an odd memory address when the flag is N and an even memory address when it is Y.
- **Reject Option (C,S)** — Selects the number of times the device is pulsed with programming voltage before it is rejected as unprogrammable. C selects the number of pulses specified by the manufacturer. S selects either a one-pulse or the military-specification number of programming pulses. Unless you are programming devices to a strict military specification, you should leave this option set at C. This option defaults to C.
- **Verify Passes (0,1,2)** — Selects the number of times to test the device. 0 directs UniSite not to test the device. 1 directs UniSite to test the device once at the device manufacturer's nominal Vcc. 2 directs UniSite to verify the device at the device manufacturer's recommended high and low Vcc levels. This parameter defaults to 2.
- \* **Erase EE Device (Y,N)** — Allows you to erase electronically-erasable PROMs. Before the programming cycle, UniSite checks the device and displays a warning if the device is non-blank. If you enable the erasing of the device, UniSite erases the device before programming the device.

### **Enhanced Security Fuse Capability**

The enhanced security fuse capability for EMICRO parts allows Security Fuse Data to be stored in a data file. Currently, some devices support this capability, including the Intel 8742AH. For more information, or to see if a device supports this capability, see the device manufacturer's data book.

### **Security Fuse Data Field**

The Security Fuse Data field cannot be restored by using the More Commands/Configure System/Restore command. Instead, Security Fuse Data will be restored from a data file.

### **General Security Fuse Information**

Whenever a disk file is specified as the data source, the programming screen should display the Security Fuse Data from the disk file. When the Security Fuse Data is changed, the data in the disk file is updated. (This applies to both logic and EMICRO devices with security fuses.)

When the security fuse is changed with a disk file as the data source, and a disk error, such as `Disk full`, occurs during the update, the entry is not successful and the old value remains. For memory devices, if the disk file is not big enough to cover the location for security fuses, the file defaults to the unprogrammed state of the fuses.

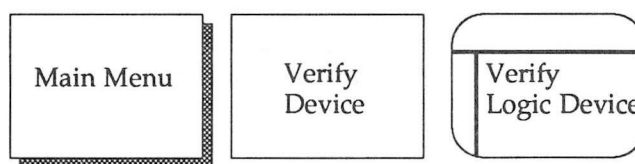
## Verify Device

The Verify Device command compares data in a programmed device with data in RAM or in a disk file. Depending on which type of device is selected, either the Verify Logic Device screen or the Verify Memory Device screen appears when you select the Verify Device command.

Before you can verify a device, you need to load the data into RAM or select a disk file as your data source. RAM data can be loaded from a master device, from a disk file, or through the serial port.

### Verify Logic Device

If you select a logic device and then select the Verify command, UniSite's Verify Logic Device screen appears.



To verify a logic device, follow these steps:

1. Select and socket a logic device.
2. Specify the parameters you want. Then press **[J]** to begin the verifying.
3. When the verify operation is complete, UniSite displays the following message in the message bar:

```
OPERATION COMPLETE. Sumcheck = xxxx
```

The following parameters can be specified in the Verify Logic Device screen.

- **Source (R,D)** — Specifies the source of the fuse data and test vectors that you wish to verify. Press **[Space]** to toggle between **R** (RAM) and **D** (disk).
- **Filename** — Specifies the name of the disk file you want the fuse data and test vectors to be verified with. This option appears only if you specify disk as the Source. The filename parameter must follow standard DOS conventions, and can include a drive descriptor. An example of a valid filename is **b:16r8.dat**.

### Optional Parameter Screens

There are two types of parameter-entry screens: simple and complex. UniSite defaults to displaying the simple, Non-default parameters screen. If you want to view the complex, All Parameters screen, press **F4** from the Non-default Parameters screen. If you have changed any of the default parameters, those changed parameters will also show up on the Non-default Parameters screen.

The following parameters are found on the complex, All Parameters Verify Logic Device screen.

- **Logic Verification (A,F,V)** — Specifies the type of logic verification to perform. Select from Fuse Verification **F**, Vector Verification **V**, or All **A**. Fuse Verification checks the fuse pattern programmed into the device with the pattern in UniSite's memory. Vector Verification functionally tests the device, using structured test vectors stored in memory. **A** directs UniSite to perform both fuse verification and vector verification. Press **Space** to step through the three choices. This parameter defaults to **A**.

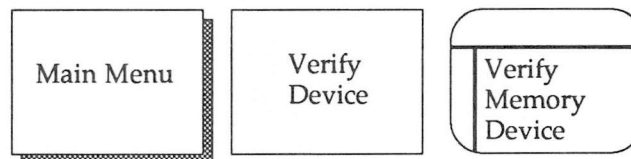
UniSite does not support vector testing for logic devices with more than 84 pins. Attempting to perform a vector test on a device with more than 84 pins will yield the following message:

```
OPERATION COMPLETE. Sumcheck = hhhhhhhh (Vector test
not supported)
```

- **Verify Passes (0,1,2)** — Selects the number of times to test the device. **0** directs UniSite not to test the device. **1** directs UniSite to test the device once at the device manufacturer's nominal Vcc. **2** directs UniSite to verify the device at the device manufacturer's recommended high and low Vcc levels. This parameter defaults to **2**.

### Verify Memory Device

If you select a memory device and then select the Verify command, UniSite's Verify Memory Device screen appears.



To verify a memory device, follow these steps:

1. Select and socket a memory device.
2. Specify the parameters you want. Then press **↵** to begin the verifying.
3. When the verify operation is complete, UniSite displays the following message in the message bar:

```
OPERATION COMPLETE. Sumcheck = xxxxxxxx
```

The following parameters can be specified in the Verify Memory Device screen.

- **Source (R,D)** — Specifies the source of the data to use to verify the device. Press **Space** to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file you want the data to be verified from. This option only appears if you have specified disk as the Source. The filename must follow standard DOS conventions, and can include a drive descriptor. An example of a valid filename is 27c256.dat.
- **Data Word Width** — Sets the word width of the data to be verified. For 8-bit (or larger) devices, the minimum word width is equal to the device word width and the maximum is 64. For 4-bit devices, your word width choices are 4, 8, 16, and 32. This value should match the data bus word width in the target system for the device being programmed.
- **Next Device** — Designates the next device in the set. For example, if you are using 8-bit devices and have specified a word width of 16 bits on the Verify Memory Device screen, then two devices are required to verify each 16-bit word. Typing **1** for the next set member directs UniSite to verify the first device in the set with even-numbered addresses of the memory block. Typing **2** directs UniSite to use odd-numbered addresses.
- **Total Set Size** — Specifies how many virtual devices are in the set for device operations. For example, if you are verifying 16-bit wide data into two 8-bit wide devices, your virtual device still equals one (one 16-bit virtual device). Any number between 1 and 99 can be entered. Automatic Set Size calculation is attempted when any of the following parameters are changed: Device width, Device Block Size or User Data Size. The following equation defines Total Set Size:

$$\text{TOTAL SET SIZE} = \frac{\text{USER DATA SIZE}}{\text{DEVICE BLOCK SIZE} \left( \frac{\text{DATA WORD WIDTH}}{\text{DEVICE WIDTH}} \right)}$$

095-0987-001

- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block used to verify the device with the source. This value is normally equal to the device size or to a multiple of the device size for verifying a set. If 0 is entered, it is reset to the device size. User Data Size works with Total Set Size to determine the total amount of bytes to verify with a set of devices.
- **Next Operation Begins At** — Specifies the address in user memory where the next data byte will be verified. This value is calculated from the Data Word Width, Device Block Size, Memory Begin Address, device width, and next set member parameters.

**Optional Parameter Screens**

There are two types of parameter-entry screens: simple and complex. UniSite defaults to displaying the simple, Non-default Parameters screen. If you want to view the complex, All Parameters screen, press **[F4]** from the Non-default Parameters screen. If you have changed any of the default parameters, those changed parameters will also show up on the Non-default Parameters screen.

The following parameters are found on the complex, All Parameters Verify Memory Device screen.

- **Memory Begin Address** — Specifies the first address, in hex, of the first byte of data to be verified. For a SetSite operation, Memory Begin Address specifies the first address of the device in the first socket. If the Source is RAM, it is a beginning RAM address. If the Source is Disk, it is a beginning disk file address. The Memory Begin Address must be an even address if you have selected a 16-bit device. The default address is 0.
- **Device Begin Address** — Specifies the first hex device address that will be verified.
- **Device Block Size** — Specifies the size, in hex, of device data used in device operations. When you select a device, Device Block Size is automatically set to the device size and normally does not need to be changed. It is also automatically set to a smaller value if the Device Begin Address is nonzero. This parameter can be changed if desired. If a zero is entered, the Device Block Size is set automatically to equal the device size.
- **Set Auto-increment** — When enabled, directs UniSite (when in a set verify mode) to the starting memory address of the next data block that is to be verified. For example, if you have four 1K x 8 devices to verify against a 4K x 8 block of data, using the auto-increment option directs UniSite to point to the first address of the next 1K block after each device has been verified. For single device operations, this feature should be disabled and the Next Device parameter should be set to 1.

---

*Note: Items with an \* (asterisk) are visible on the screen only if the selected device supports the feature.*

- \* **Compare Electronic ID** — When enabled, compares the electronic signature of the device against the electronic signature of the selected algorithm.
- \* **Odd/Even Byte Swap (Y,N)** — When enabled, allows the Most Significant Bytes (MSB) and the Least Significant Bytes (LSB) of 16-bit words to be swapped when data is verified between a 16-bit device and memory. When disabled, data is verified with the MSB at an odd address. When enabled, the MSB is at an even address.
- **Verify Passes (0,1,2)** — Selects the number of times to test the device. 0 directs UniSite not to test the device. 1 directs UniSite to test the device once at the device manufacturer's nominal Vcc. 2 directs UniSite to verify the device at the device manufacturer's recommended high and low Vcc levels. This parameter defaults to 2.



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## More Commands

In general, the commands found under the More Commands menu do things other than loading, programming, and verifying devices.

The More Commands is a multi-level menu with some commands nested three levels deep. The items on the top-level of the More Commands menu are described below:

- **Configure System** — Contains commands to perform the update operation, and edit, save, and restore UniSite's communications, interface, serial I/O, and programming parameters. (These are the items shown on the default parameters list at the beginning of this section.) From this menu, you can also select a new terminal type, and access Keep Current Configuration functions. You could use these commands to set up unique parameter files for each device type you want to program and then save those values from the More Commands/Configure System/Save screen. These parameter settings can then be loaded at a later time using the More Commands/Configure System/Restore screen.
- **Device Checks** — Performs device tests on socketed devices.
- **Edit Data** — Allows you to edit RAM or disk data. Separate editing features exist for logic and memory devices.
- **File Operations** — Performs various operations on UniSite's disk files, such as loading, saving, deleting, or renaming a file.
- **Job File** — Allows you to play back a series of keystrokes. This is useful if you are consistently programming the same devices. Up to ten job files may be stored on any Algorithm or System disk.
- **Remote Control** — Switches UniSite into remote mode, where it will accept commands sent from a remote computer. Chapter 6, "Computer Remote Control," lists the commands recognized by UniSite in remote mode.
- **Self-test** — Performs diagnostic checks on UniSite's circuitry.
- **Transfer Data** — Allows you to upload or download data to or from UniSite. Also allows you to select or change the data translation format.
- **Yield Tally** — Allows you to view or clear programming statistics.



## Configure System

The commands on the Configure System menu allow you to accomplish four basic tasks:

- Change communications protocols between UniSite and the other equipment connected to UniSite, such as a terminal, or a host computer.
- Configure the Remote and Terminal ports so they will be compatible with your terminal or host computer.
- Edit, save, or restore a set of programming features unique to the device type you want to program.
- Access Keep Current algorithm files.

The commands available on the Configure Systems menu are described on the following pages.

## Edit

Use the commands on the Edit menu to change system parameters. These parameters include the settings of various options and features for the Programming, Serial I/O, Communication, and Interface screens.

Selecting Edit from the Configure System menu will display the Edit Parameter menu. From this menu you can choose Programming, Serial I/O, Communication, or Interface parameter screens which are described in the following subsections. Default parameter settings are shown in the table at the beginning of this chapter.

The system parameters that can be saved and restored with the More Commands/Configure System/Save and More Commands/Configure System/Restore commands are listed below.

**Programming Parameters**

Filename  
Source/Destination  
Reject Option  
Logic Verification  
Verify Passes  
Verify Data Format  
Data Word Width  
Algorithm Source  
User Data Size  
Memory Begin Address  
Device Begin Address  
Device Block Size  
Illegal Bit Check  
Blank Check  
Compare Elec ID  
Enable Yield Tally  
Program Security Fuse  
Erase EE Device  
Odd/Even Byte Swap  
Continuity Check  
Compensated Vector Test  
RAM Device Selection

**Serial Port Parameters**

Baud Rate  
Parity  
Data Bits  
Stop Bits  
Enable CTS/DTR

**Communication Parameters**

Source/destination  
I/O Translation Format  
I/O Addr Offset  
I/O Timeout  
Upload Wait  
Transmit Pacing  
Download Echoing  
Output Record Size  
Number Of Nulls  
Instrument Control Code  
Fill Memory Option  
Fill Data  
High Speed Download  
User Menu Port \*  
JEDEC I/O Translate DIP/LCC Vectors  
Upload: Use End-of-file Delimiter  
Upload End-of-file Delimiter  
Download: Use End-of-file Delimiter  
Download End-of-file Delimiter  
Upload Host Command  
Download Host Command

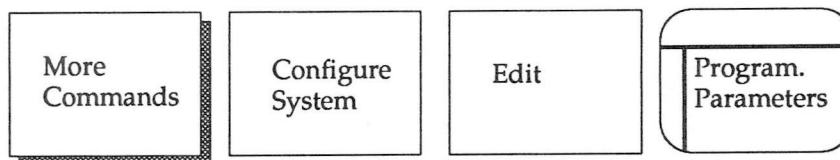
**Interface Parameters**

Power On CRC Mode  
Enable Terminal Beeps  
Remote On Code  
Remote Off Code  
Main Menu Job Files

\* This parameter can be saved with the Save System Configuration command and is read on power-up, but this parameter is not restored when a Restore System Configuration command is performed.

## Programming Parameters

Use the Edit Programming Parameters screen to specify programming options, to enter memory block parameters, and to enable/disable different tests.



If you want to save the settings for use in a future programming session, then you should save them in a configuration file. Use the Save command (part of the Configure System menu) to save the settings for later use.

The different programming parameters and settings are explained below.

- **Filename** — Specifies the disk file to use for load, program, and verify operations when the programming source is set to **D** (disk). The filename must follow standard DOS conventions, and can include a drive descriptor. An example of a valid filename is **a:16r8.dat**.
- **Source/Destination (R,D)** — Specifies the location of data to load, program, verify, download, upload or edit. Press **[Space]** to toggle between **R** (RAM) and **D** (Disk).
- **Security Fuse Data (0,1)** — To program the security fuse, set this parameter to **1** and set the Program Security Fuse parameter to **Y**. This parameter defaults to **0**, which disables programming of the security fuse.
- **Reject Option (C,S)** — Selects the number of times the device is pulsed with programming voltage before it is rejected as unprogrammable. **C** selects the number of pulses specified by the manufacturer. **S** selects either a one-pulse or the military-specification number of programming pulses. Unless you are programming devices to a strict military specification, you should leave this option set at **C**. This option defaults to **C**.
- **Logic Verification (F,V,A)** — Specifies the type of logic verification to perform. Select from Fuse Verification **F**, Vector Verification **V**, or All **A**. Fuse Verification checks the fuse pattern programmed into the device with the pattern in UniSite's memory. Vector Verification functionally tests the device, using structured test vectors stored in memory. **A** directs UniSite to perform both fuse verification and vector verification. Press **[Space]** to step through the three choices. This parameter defaults to **A**.  
  
UniSite does not support vector testing for logic devices with more than 84 pins.
- **Verify Passes (0,1,2)** — Selects the number of times to test the device. **0** directs UniSite not to test the device. **1** directs UniSite to test the device once at the device manufacturer's nominal Vcc. **2** directs UniSite to verify the device at the device manufacturer's recommended high and low Vcc levels. This parameter defaults to **2**.

- **Verify Data Format (B,H)** — Specifies either **B** (binary) or **H** (hex) for the mis-verify data display format on the Verify Memory Device screen.
- **Algorithm Source (D,E,K)** — Selects the source for device algorithms. **D** is the default and directs UniSite to select algorithms from the algorithms included on the Algorithm disk. If you set Algorithm Source to **D** and then choose the Select Device command, UniSite displays the standard Manufacturer List screen, as shown in Figure 4-4.

**E** directs UniSite to select algorithms from the alg.ext file. Extended algorithms (algorithms contained in the alg.ext file) are used by Data I/O to handle device approvals and special device algorithm updates. If you set Algorithm Source to **E** and then choose the Select Device command, UniSite displays a Manufacturer List screen containing only the manufacturers found in the alg.ext file. If this parameter is set to **E** and UniSite cannot find the alg.ext file, UniSite displays the following error message in the message bar:

Cannot access system file. Insert System disk.

**K** directs UniSite to select algorithms from the Keep Current algorithms it finds on the disks in the disk drives. If you set Algorithm Source to **K** and then choose the Select Device command, UniSite displays the Keep Current Part List screen, as shown in Figure 4-7. Keep Current algorithms are downloaded from Data I/O's Keep Current BBS and provide immediate support for new device algorithms and updated device algorithms. For more information, see the Keep Current documentation behind the Keep Current tab at the back of this binder.

- **Data Word Width** — Should match the data bus word width in the target microprocessor system for the device being programmed. For 8-bit (or larger) devices, any word width between 4 and 64 may be typed in. For 4-bit devices, your word width choices are 4, 8, 16, and 32. When performing a Quick Copy, the Data Word Width is set to the device word width and restored to the original value after the Quick Copy is complete.

With one exception, UniSite always changes this parameter to match the selected device's width. The exception is if the current Data Word Width is 16, your selected device's word width is 8 AND the previously-selected device's word width is also 8, this parameter does not change.

- **User Data Size** — Defines the hexadecimal size, in bytes, of the data block used in device operations. This value is normally equal to the device size or to a multiple of the device size for set programming. User Data Size works with Total Set Size to determine the total amount of bytes for a set operation. This parameter can also indicate the number of bytes in a data transfer operation.

- **Memory Begin Address** — Specifies the first hex address in RAM to load data from a device. Also specifies the first address where a device is programmed/verified. If the user memory is RAM, it is a beginning RAM address. If the user memory is disk, it is a beginning disk file address. The Memory Begin Address must be an even address if you have selected a 16-bit device. The default address is 0.
- **Device Begin Address** — Specifies the first address used in device operations. This option is used for memory devices only.
- **Device Block Size** — Defines the size, in hex, of device data used in device operations. When you select a device, Device Block Size is automatically set to the device size and normally does not need to be changed. It is also automatically set to a smaller value if the Device Begin Address is nonzero. This parameter can be changed if desired. If a zero is entered, the Device Block Size is set to the device size.
- **Illegal Bit Check (Y,N)** — Enables or disables the illegal-bit test. This test compares data in a device against data in UniSite's RAM to determine if the device has already-programmed locations of incorrect polarity. For example, UniSite returns an illegal-bit error in the following situation: data in RAM indicates a specific bit should be in an unprogrammed state while the corresponding bit in the device is in a programmed state. This parameter is enabled by default.
- **Blank Check (Y,N)** — Enables or disables the blank check test. A Blank Check test checks a device for programmed bits. This parameter defaults to Y, which enables the test.
- **Compare Elec ID (Y,N)** — Compares the electronic ID of the device against the electronic ID of the selected algorithm.
- **Enable Yield Tally (Y,N)** — When enabled, directs UniSite to keep a running tally of the programming yields for the last sixteen types of devices programmed. These totals show how many devices passed and failed, and what specific errors, if any, have occurred. This parameter defaults to N, which disables the test. A more complete description of this feature can be found in the "Yield Tally" section of this chapter.
- **Program Security Fuse (Y,N)** — Enables or disables the programming of the security fuse. To program the security fuse, set this parameter to Y and set the Security Fuse Data parameter to 1. This parameter defaults to N, which disables programming of the security fuse.
- **Erase EE Device (Y,N)** — Bulk erases the electronically erasable devices before UniSite attempts to program them.

- **Odd/Even Byte Swap (Y,N)** — When enabled, swaps data at odd and even memory address locations during a load, program, or verify operation. The contents of user RAM are not altered. Swapping bytes is useful when manipulating 16-bit data for a target system that has a different architecture than the original file convention. For example, Motorola 16-bit data files store the Most Significant Bytes (MSB) at even-byte locations; Intel stores them at odd-byte locations. UniSite maintains its RAM data and file data with the convention that the MSB of a 16-bit word resides in the odd byte of memory.

The default for this parameter is N. When set to Y, data is loaded from a 16-bit device and stored into user memory with the MSB at even addresses.

Similarly, when programming a device, the data is programmed into a device retrieving the MSB from an odd memory address when the flag is N and an even memory address when it is Y.

- **Continuity Check (Y,N)** — Checks for open device pins before programming a device. This parameter is enabled by default, and also when a new device type is selected.
- **Serial Vector Test (Y,N)** — When enabled, this test applies each vector's input states serially, starting with pin one and stepping through the remaining pins. This test is a diagnostic tool designed to help debug and classify test vector failures. Specifically, this test is designed to isolate test vectors that are sequence dependent. If a sequence-dependent vector is found, it should be broken into two or more vectors to make them sequence independent.

The JEDEC specification for test vectors requires that test vectors be sequence independent. If sequencing between pins is important, then the test vector should be separated into two or more vectors to make them sequence independent. This test helps isolate vectors that are sequence-dependent and should be expanded.

This switch is available only for logic devices and is disabled on power up. The switch is also returned to N when parameters are restored or when another device is selected.

- **High Speed Logic Drivers (Y,N)** — When enabled, this test increases the speed of the logic transitions between 0 to 1 and 1 to 0 of the test vector input states. This test is a diagnostic tool designed to help debug and classify test vector failures. Specifically, this test is designed to help identify vector transitions that are speed dependent. When isolated, these vectors should be edited to use the high speed clocking functions provided by test vector characters C, K, U, and D.

The speed of the logic transitions is increased by driving the 0 and 1 levels using the high speed logic drivers instead of a current limited driver.

The JEDEC specification for test vector 0 and 1 inputs states defines that these inputs be current limited, so that the outputs of the device under test can overdrive the 0 or 1 level without damaging the device. However, the current-limited drivers normally used to drive 0 and 1 have inherently slow transition speeds. Enabling this test helps identify vectors sensitive to transition speeds.

This switch is available only for logic devices and defaults to N on power up. The switch is also returned to N when parameters are restored or when another device is selected.

---

**CAUTION:** *If used improperly, the High Speed Logic Drivers test may cause over current errors or may damage the output pins on the device. The High Speed Logic Drivers test should only be used as a diagnostic test to debug test vector problems.*

- **Compensated Vector Test (Y,N)** — Y enables load compensation on PLD output pins under test during vector testing. This may eliminate structured test errors when testing PLDs sensitive to output loading, where many of the device's registers transition simultaneously. This test is available only for logic devices and defaults to N at power up. This parameter defaults to Y if you select a non Open Collector device and defaults to N if you select an Open Collector device. This parameter can be saved/restored with the Save/Restore Configuration command.
- **RAM Device Selection** — When selected, allows the device programming algorithms to reside in user RAM. This allows much faster device selection than the normal method of loading the algorithm from the disk each time a device is selected. If this switch is on when the programmer is powered up, the algorithms are loaded into RAM at that time. If the switch is enabled later, the algorithms will be loaded into RAM when the next device is selected. This feature requires UniSite to contain the 4MB option.

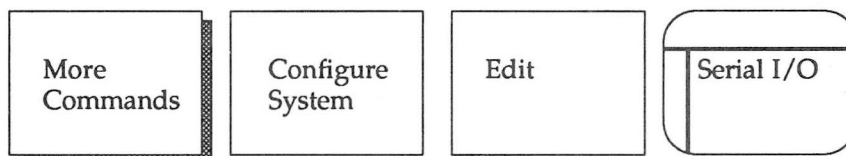
---

*Note: You must have at least 4MB of RAM installed in UniSite to use the RAM Device Selection feature.*



## Serial I/O Port Configuration

Use the Edit Serial I/O Port Configuration command to specify the communications parameters for UniSite's two serial ports.



Use this command when connecting equipment to UniSite's Terminal and Remote ports so they can be compatible with your terminal or host computer. If you want to save the settings of the two ports for use in a future session, you should save them in a configuration file.

The different parameters and their settings are explained below.

A change in the serial port parameters does not become effective until you press ☐. If terminal settings are changed, a message appears, prompting you for another ☐ after you have altered your terminal to match the new settings. Output to the terminal is suspended until you enter the second ☐.

- **Parity (N,O,E)** — Three options are available for the parity setting: N (No parity), O (Odd parity), and E (Even parity). Press ☐ to cycle through the three values.
- **Data Bits (7,8)** — Specifies the number of data bits UniSite recognizes during serial communication. Press ☐ to toggle between the two values.
- **Stop Bits (1,2)** — Specifies the number of stop bits between data bytes. Two stop bits are generally used for baud rates of 110 or lower. Press ☐ to toggle between the two values.
- **Enable CTS/DTR (Y,N)** — Enables or disables CTS/DTR hardware handshaking. Press ☐ to toggle between the two values.
- **Baud Rate** — Specifies the baud rate for both the Terminal and Remote ports. Press ☐ to cycle through the baud rates supported by UniSite.

UniSite supports the following baud rates: 50, 75, 110, 134.5, 150, 200, 300, 600, 1050, 1200, 1800, 2000, 2400, 4800, 7200, 9600, and 19.2 kbaud (and 115.2 kbaud with HiTerm). However, not every baud rate works on one port when certain baud rates are selected for the other port. If you select incompatible baud rates, UniSite beeps and displays the following error message:

WARNING: Selection not compatible with other channel!

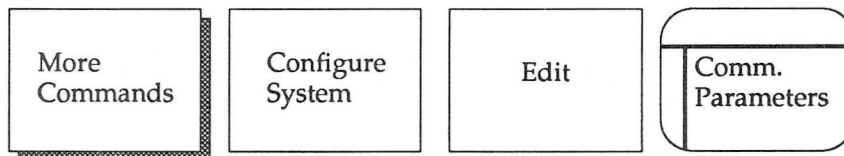
If one of the rates on the left is used for either port, then the corresponding rate on the right does not work on the other port.

50	75, 150
150	200, 1050
7200	75, 150, 1800, 2000, 19.2K
19.2K	50, 200, 1050, 7200



## Communication Parameters

Use the Edit Communication Parameters screen to change UniSite's I/O characteristics when downloading or uploading data.



If you want to save the settings of the communication parameters for use in a future session, you should save them in a configuration file. Use the Save command (part of the Configure System menu) to save the settings for later use.

- **Source/destination (R,T)** — Specifies the source/destination port of the data to be transferred. Press **[Space]** to toggle between R (Remote port) and T (Terminal port).
- **I/O Translation Format** — Specifies the two-digit decimal code that corresponds to the translation format in which the data will be transferred. For a detailed list and sample of each format, see the Translation Formats chapter of this manual.
- **I/O Addr Offset** — Specifies address offset to use during a data transfer. The I/O Addr Offset is subtracted from the I/O Addresses during Input from Disk and Download operations, so data is properly located in User RAM or on disk. During Output to Disk and Upload operations, the I/O Addr Offset is added to the User Memory Address.

Specifying FFFFFFFF instructs UniSite to set the I/O Addr Offset to the first incoming address of data received from Input from Disk and Download operations. During Output to Disk and Upload operations, setting the I/O Addr Offset to FFFFFFFF is the same as setting the I/O Addr Offset to 0, since no offset is added to the I/O addresses sent out.

To load your file absolutely, set the I/O Addr Offset to 0; the data is stored at the addresses specified in the data file.

This parameter defaults to FFFFFFFF.

- **I/O Timeout** — Limits the time, from 0 to 99 seconds, UniSite waits for a data transfer to begin. 0 disables the timeout completely.
- **Upload Wait** — Sets the period that UniSite waits before it begins sending data to the host computer after the host upload command is sent. The range of this parameter is 0 to 99 seconds.
- **Transmit Pacing** — Specifies the time-delay to insert between characters transmitted to a host during an upload. See the note about transmit pacing at the end of this section for more information.
- **Download Echoing (Y,N)** — Displays the data being downloaded. This may slow down UniSite in receiving data and is not recommended for high baud rates, such as 9600 and above. Download echoing may not be used with the binary formats.

- **Output Record Size** — Specifies the number of data bytes contained in each data record during upload. The range of this parameter is 0 to 256 bytes. Some formats have fixed record lengths for which this parameter does not apply.
- **Number Of Nulls** — Sets the number of null characters sent between each record in a data file after a carriage return and line feed. The range of this parameter is 0 to 254 nulls. Entering 255 specifies no nulls and suppresses the line feed.
- **Instrument Control Code** — Specifies how the data transfer will be controlled. Selecting 0 specifies regular XON/XOFF handshaking, selecting 1 or 2 specifies a special handshaking sequence (see the Translation Formats chapter for more information).
- **Fill Memory Option (N,D,U)** — Specifies what data user memory will be filled with before downloading begins. This option is used for Download Data and Input from Disk operations. If you select N (none), user memory will not be changed and whatever is in user memory will be overwritten by the downloaded data. If you select D (default), user memory will be filled with the data appropriate to initialize unused locations to the unprogrammed state for the device type selected. If you select U (user defined), then user memory will be filled with whatever you specify in the Fill Data option.
- **Fill Data** — Allows you to type in the hexadecimal data to be placed at unused locations of user memory during download. To use this option, you must also specify U for the Fill Memory option. User memory can also be filled with the specified data during the Edit Data operation.
- **High Speed Download (Y,N)** — When enabled, this parameter allows UniSite to download data from a PC at 115.2 kbaud. For high speed download to work, this parameter must be set to Y and the following conditions must be met:
  - You must have an IBM-compatible PC connected to UniSite's Remote port.
  - You must have Data I/O's HiTerm software installed and running on the PC.
  - The data you are downloading must be stored in a data format supported by HiTerm for high speed downloads. The HiTerm manual contains a list of supported formats.
  - You must use HiTerm's TR command when you download data to UniSite. See the HiTerm manual for more information.Setting this parameter to Y causes the User Menu Port parameter to be set to R (Remote port). See the "Setting up High Speed Download" section of Chapter 2 for more information.
- **User Menu Port (R,T)** — Specifies which of UniSite's two ports should be used to send user menu information and to receive commands. (User menu information and commands are what you see when you operate UniSite from a workstation or a terminal.) Normally, this parameter is set to T (Terminal port).

If you want to use the 115.2 kbaud high-speed download option, use this parameter to redirect the user menu information from the Terminal port to the Remote port. To redirect the user menu information, set this parameter to the port you want connected to the controlling PC and press ☐. Then move the cable to the port specified on UniSite.

---

*Note: When switching ports, make sure the communication settings of the terminal/PC and the port you switch to are the same. Also, make sure you switch between compatible terminals; for example, you cannot switch from an ANSI 3.64 compatible terminal to a VT-100 compatible terminal.*

Setting the High Speed Download parameter to Y causes this parameter to be set to R (Remote port).

- **JEDEC I/O Translate DIP/LCC Vectors (Y,N)** — When enabled, translates test vectors for a device from its DIP package to its PLCC/LCC package. If this feature is selected, UniSite alters the test vectors during I/O translation, allowing for the different pinouts of the two package types. During downloading, vectors are converted from DIP to PLCC/LCC; during uploading, vectors are converted from PLCC/LCC to DIP. Use this feature if you have created test vectors for a DIP device but actually want to program the PLCC/LCC version of the same device.
- **Upload: Use End-of-file Delimiter (Y,N)** — When enabled, inserts an end-of-file character following an uploaded file. The delimiter character signals the host system that the upload is complete. During an upload, an end-of-file character is transmitted to the host. To invoke this feature, you must select this option and provide the two-digit hexadecimal number of the ASCII character you want to use as the end-of-file character. Select any value between 01 and 1F.

---

*Note: Use this feature only if you are using a format with an end-of-text character. It cannot, for example, be used for files stored in a binary data translation format.*

- **Upload End-of-file Delimiter (1-1F)** — Selects the two-digit hexadecimal number of the ASCII character you want to use as the end-of-file character in uploading data to a host computer. Select any value between 01 and 1F.
- **Download: Use End-of-file Delimiter (Y,N)** — When enabled, signals UniSite that the transmission of a particular file is complete. During a download operation, characters after the last record and before the end of the file would be ignored. If you wish to use this feature, you must select this option and you must provide the two-digit hexadecimal number of the ASCII character you want to use as the end-of-file character. Any value between 01 and 1F may be selected.
- **Download End-of-file Delimiter (1-1F)** — Selects the two-digit hexadecimal number of the ASCII character you want to use as the end-of-file character in downloading from a host computer. Any value between 01 and 1F may be selected.

- **Upload Host Command** — Type the command you want to use to tell the host system what to do with the data to be uploaded. The command may be up to 58 characters long. You can use host operating system commands on this line. For example, with UNIX, you would enter an upload command such as `cat > 27128.hex`. UniSite appends a `␣` to the command.
- **Download Host Command** — Type the command you want to send to the host system to initiate a file transfer download to UniSite. The command may be up to 58 characters long. You can use host operating system commands on this line. For example, with UNIX, you would have a download command such as `cat 27128.hex`.

### Transmit Pacing

Transmit pacing provides a time delay between characters sent to the host by UniSite, affecting data uploaded from UniSite as well as host commands sent by UniSite. If you encounter errors during upload operations to a host, you must use the transmit pacing delay feature to eliminate the errors. This will provide a character-by-character delay to prevent data overrun on the host. This type of condition may exist in spite of the use of hardware and/or software handshaking on the host and UniSite. This condition is most likely to occur on hosts which cannot accept incoming data fast enough at high baud rates.

Since the host may not explicitly report any error, to determine if errors are occurring during an upload process, transfer data to the host by using the upload function with an I/O format selected which utilizes checksums (such as Format 87). Note the checksum reported by UniSite when the transfer is complete. Then transfer the same data back to UniSite while UniSite is performing the compare data function, again noting the checksums. If the checksums don't match or if an error is encountered, a transmit pacing delay should be used.

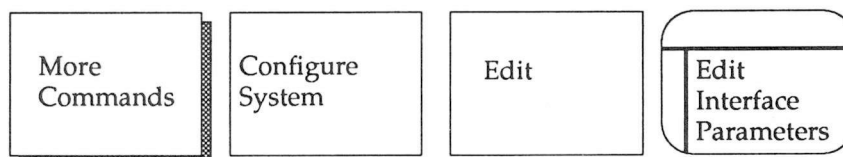
Typical delay values are presented in the following table. The transmit pacing value is specified in tenths of milliseconds delay. For example, a value of 12 represents 1.2 milliseconds delay. The minimum delay possible (other than zero) is 4 (0.4 milliseconds) and the maximum is 99 (9.9 milliseconds). The factory default is 0. The transmit pacing value required for reliable data transfers may vary somewhat from those presented in the table due to the particular characteristics of the host involved. This is primarily determined by the processor speed of the host and whether or not software other than the communication software is running at the same time on the host (in the latter case larger delay values may be required).

**Transmit Pacing  
Delay Values**

	4800 and less	9600	19.2K
HiTerm			
PC	0	0	6
AT	0	0	6
VTERM			
PC	0	4	15
AT	0	0	8
PROCOMM			
PC	0	4	9
AT	0	0	6

**Interface  
Parameters**

Interface Parameters are parameters that are not related directly to uploading/downloading of files.

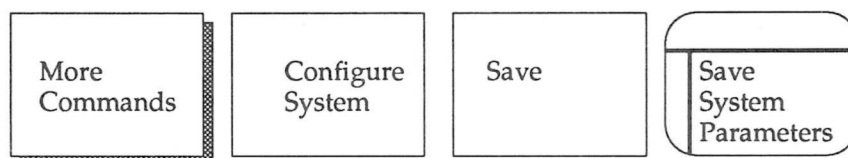


The parameters on the interface parameters screen are described below.

- **Power On CRC Mode (Y,N)** — When enabled, this feature allows you to power up UniSite and have it automatically enter computer remote control mode. You can exit CRC by pressing **Ctrl** + **Z**.
- **Enable Terminal Beeps (Y,N)** — When enabled, UniSite beeps each time an error message is generated.
- **Remote On Code** — When enabled, you can use an ASCII character to enable the Remote port. Type the two-digit hexadecimal number that represents the ASCII character you want to use to enable remote control.
- **Remote Off Code** — When enabled, you can use an ASCII character to disable the Remote port. Type the two-digit hexadecimal number that represents the ASCII character you want to use to disable remote control.
- **Main Menu Job Files (Y,N)** — When enabled, you can start a Job File from the Main Menu rather than having to go to the Job Files menu.

## Save System Parameters

System Parameters are all the parameters on the Programming, Serial I/O, Communication, and Interface screens. With the Save command, you can save a set of system parameters for future use.



This feature is useful if you want UniSite to power up with preset parameters. This feature is also useful if multiple users prefer to have their own set of parameters easily available.

To save a system configuration, follow these steps:

1. Before using the Save command, go through the above-mentioned Configure/Edit menus, setting the system parameters to fit your particular application.
2. When you have UniSite configured the way you want, go to the Save screen and select a file number in which to store the configuration file. The file number must be between two and nine. File numbers zero through two are reserved for factory defaults, power-up defaults, and CRC defaults.
3. Next, enter a description of the configuration file you are saving, for example, **Config file for Intel 27C256**. The name can be up to 30 characters long. After you enter the file description, press . UniSite displays the following message in the message bar:

Parameter Entered

4. Finally, to save the current system configuration to a configuration file, press . While saving the configuration, the action symbol rotates. When done, UniSite displays the following message:

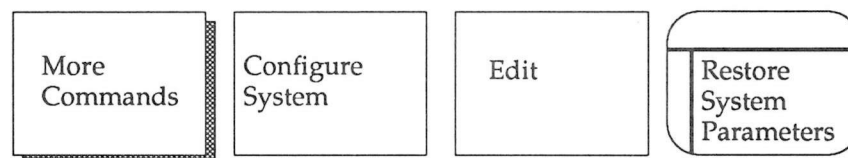
System parameters saved

---

*Note: If a device has been selected, it is saved as part of the configuration file.*

## Restore System Parameters

System Parameters are all the parameters on the Programming, Serial I/O, Communication, and Interface screens.



With the Restore command, you can restore a set of previously saved system parameters.

To restore a system configuration, follow these steps:

1. Select Restore from the Configure System Parameters menu.

2. UniSite displays a list of all the configuration files that have been saved on the System disk. Look at the list of configuration files and find the file number of the file you want to restore.
3. Enter the file number of the configuration file you want to restore and press ☐. UniSite loads the system parameters and displays the following message in the message bar when done:

System parameters restored

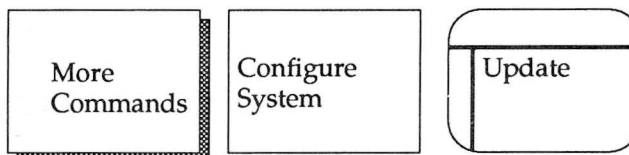
---

*Note: When you restore a configuration, the device algorithm selected when the configuration file was saved (if any) will also be restored.*

When you return to a screen, the cursor will be where you left it. Restoring parameters to factory defaults or power-up defaults returns the cursor to its original position. Restoring parameters to user-defined defaults has no effect on cursor positions.

## Update

Use this command to update a new version of the Algorithm disk.



### When Should I Use This Command?

Use this command when you receive a new Algorithm disk. When shipped from the factory, the Algorithms disk is accompanied by a security device which contains the information necessary to update the Algorithm disk.

---

*Note: When you first receive your UniSite, the System disk and the Algorithm disk are already installed, so you don't need to run the Update command.*

### Before You Begin

1. Make sure the Site40 or Site48 is installed in UniSite.
2. Make sure the cable connecting UniSite and the controlling terminal/PC/workstation is connected to the **Terminal** port on UniSite.
3. Make sure that the communication parameters on your controlling terminal/PC/workstation are set as follows:
  - 9600 baud
  - 1 stop bit
  - 8 data bits
  - No parity

Later, when you are finished installing the new version of system software, you can reconfigure your UniSite as you had it before the update.

### Updating the Algorithm Disk

Follow the steps below to update a new Algorithm disk.

1. Make sure Site40 or Site48 is installed in UniSite.
2. Power up UniSite if it is not already powered up. Make sure you boot up UniSite with the NEW System disk in drive A. If you have a two drive UniSite, make sure the NEW Algorithm disk is in drive B.  
  
If you have a two-drive UniSite, skip to step 4.
3. If you have a single-drive UniSite, boot the UniSite with the System disk in drive A. When UniSite finishes booting, put the NEW Algorithm disk in drive A. Press **M C U**.



Figure 5-2  
The Update Screen

4. You should be looking at the Update screen, which is shown in Figure 5-2.

FILENAME:	RAM AVAIL: 2176KB	REV: X.XX	Y.YY Z.Z
MANUFACTURER:	PART #:	FAMILY/PIN CODE: 000 / 000	
I/O FORMAT:			
-			
UPDATE DEVICE ALGORITHMS			
<b>WARNING:</b> Removing the system disk, or turning off the system power will damage the programmer.			
(1) Insert Algorithm disk into drive A or B. (2) Insert the security device into the Site40 or Site48 socket. (3) Press Return to update device algorithms. (3) When the message "OPERATION COMPLETE" appears, discard the security device.			
Return: Execute	F1: Main menu	F2: Prev menu	F3 or ?: Help

5. Insert the security device, which was shipped with the Update Kit or the Upgrade Kit, into the socket in the small module. (You can use either Site40 or Site48.) Insert the device as if you were going to program it. Lock the security device into place.
6. Press  to start the update operation. The action symbol rotates while UniSite is working. When the update is done, the following message is displayed in the message bar:
- OPERATION COMPLETE
7. Discard the used security device. It is no longer needed and has been rendered useless.

### Verifying the Update

This section tells you how to verify that you installed the software update properly.

- Press  to return to the Main Menu.
- Press  to choose the Select Device command. Select any device; the specific device you select is not important.
- UniSite displays the following message if the software update was not installed properly.

OPERATION ABORTED: Product security violation

Contact Data I/O Customer Support if the update did not install properly.

If UniSite returns to the Main Menu without displaying an error message, you installed the update properly. You are finished with the installation of the new version of system software.

**When You Are  
Finished**

When you are finished updating your Algorithm disk, we suggest you make a backup copy of your new Algorithm disk and new System disk. See the Duplicate Disk command for more information on making a backup copy of your Algorithm disk and System disk.

---

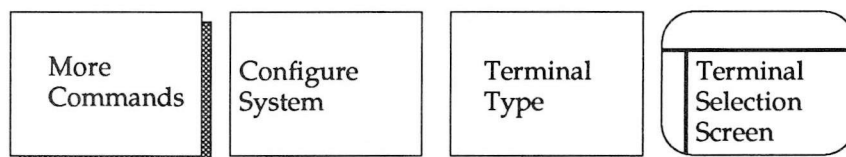
*Note: The backup disks must first be formatted using the UniSite Format Disk Operation.*

If you have access to a DOS-based PC with a 3.5" disk drive, you can use the DOS DISKCOPY command to make a copy of your Algorithm disk and System disk. If you use DOS, make sure you use DISKCOPY and not COPY. The backup must be an exact, bit-for-bit, sector-for-sector copy of the original. Store the backup copy in a safe place.

Also, check your job files to make sure they produce the same results as they did before you updated your system. We suggest you re-record your job files when you change versions of system software or when you add libraries. For more information see the description of the Job Files command later in this chapter.

## Terminal Type

This command changes the current and default terminal types.



A list of compatible terminal types follows the instructions for changing the terminal type.

To change the current terminal type or default terminal type, follow these steps:

1. If you have not already done so, configure your terminal to match one of the compatible terminal types.
2. Select the Serial I/O Parameters screen from the More Commands/Configure System/Edit/Serial I/O menu and observe the settings of the port you want to connect the new terminal to. If the terminal's communications protocol does not match the port's, change the settings of the new terminal to match the port's settings.
3. Select the More Commands/Configure System/Terminal Type command. At this point UniSite displays the default and current terminal types, and the available terminal types. Select a terminal type, enter the number corresponding to that terminal type and press ☐. You have changed the terminal type for this current session.
4. UniSite then prompts you with the following:  

```
Save terminal type as power on default? (Y/N) [N]
```

If you want to change the default terminal type, then continue with step 5. If you do not want to change the default terminal type, then go to step 6.
5. If you do not want to change the default terminal, press ☐ ☐ and go to step 7.
6. To change the default terminal type, press ☐ ☐. UniSite saves the new terminal type to disk. The new terminal type is now part of the power-on parameters.
7. The screen clears and UniSite returns to the Configure System Parameters menu. Resume normal operation.

## Approved Terminals

UniSite is compatible with the terminal types listed below. If your terminal is not included in the list, refer to the manual supplied with the terminal to determine if it can emulate one of those mentioned below.

- ANSI 3.64 compatible terminals
- DEC VT-100 compatible terminals
- Qume QVT-101 compatible terminals
- TELEVIDEO TVI-910 compatible terminals
- Wyse WY-30 compatible terminals

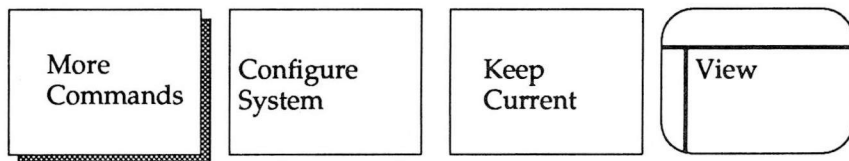
## Keep Current

The commands in the Keep Current menu allow you to access Keep Current algorithm files (.KCx). Commands available on this menu include the following:

- View
- Replace/Restore
- Delete
- Purge

### View

This command allows you to view a list of .KCx files.



View displays information on all .KCx files found on both drives A and B. Compatibility between system software and Keep Current algorithms is not checked.

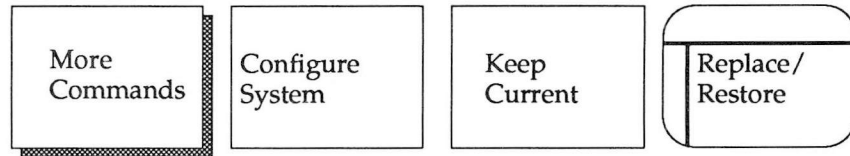
To view Keep Current algorithm files, follow these steps:

1. Insert the disk with the .KCx files you want to view into either disk drive.
2. When you select the View command, the dialog window fills with a directory listing. UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you want to view files on another disk, press **F2**, insert another disk, and return to the beginning of this step.

**Replace/Restore**

This command displays the Replace/Restore screen. In the Replace/Restore screen, Keep Current algorithms can be toggled between "replaced" and "restored" status.



If a part is marked as "replaced," the Keep Current algorithm is used instead of its corresponding algorithm from the **ALG.SYS** file during normal device selection. Parts previously marked as "replaced" can be restored, in this case, the **ALG.SYS** algorithm is used during normal device selection for that part.

To toggle algorithm(s) between "replaced" and "restored" status, follow these steps:

1. Insert the disk with the .KCx files you want to replace or restore into one of the disk drives. Insert your algorithm disk in the other drive.
2. When you select the Replace/Restore command, UniSite first checks to see if **ALG.SYS** and **KCMARKER.SYS** have been loaded into RAM. If they have not been loaded, UniSite will search for the algorithm disk. If the algorithm disk is not found, the following message is displayed:

Cannot access system file. Insert algorithm disk.

If this message is displayed, insert the algorithm disk into one of the disk drives, and try again.

If no Keep Current algorithms are found or the algorithms are not compatible with the current version of your system software, the following message is displayed:

Insert Keep Current algorithm disk

If this message is displayed, insert a disk with compatible Keep Current algorithms into one of the disk drives, and try again.

3. On the Replace/Restore screen, the dialog window fills with a directory listing with parts marked as "replaced" displayed in reverse video. UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

Note that not all .KCx files are displayed. The only files that are displayed are those that

- Have a corresponding algorithm in **ALG.SYS** (the algorithm can already be selected during the normal device selection)
- Are compatible with your version of the system software

If you want to view files on another disk, press **F2**, insert another disk, and return to the beginning of this step.

4. Move the cursor to the Replace/Restore field and enter the number corresponding to the file you want to replace or restore.
5. To toggle the file, press ☐ . If you do not want to toggle the file, press **F2** to return to the Keep Current Configuration menu.

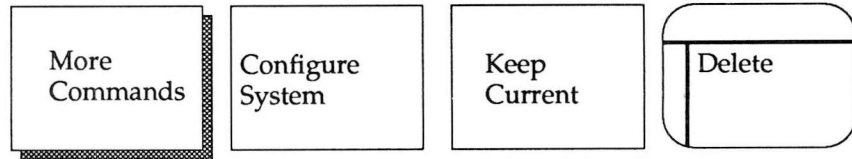
If you toggle the part to "replaced" status, it is displayed in reverse video. If the part was already marked as "replaced," it is toggled to "restored" status.

---

*Note: The maximum number of replaced algorithms is 10.*

## Delete

This command deletes a .KCx file from a disk.



To delete a file from a disk, follow these steps:

1. Insert the disk with the .KCx file you want to delete into either disk drive.
2. When you select the Delete command, the dialog window fills with a directory listing. UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the file you want to delete, press **F2**, insert another disk, and return to the beginning of this step.

3. Move the cursor to the Delete field and enter the number corresponding to the file you want to delete.
4. Move the cursor to the Are you sure field and press **Y**.

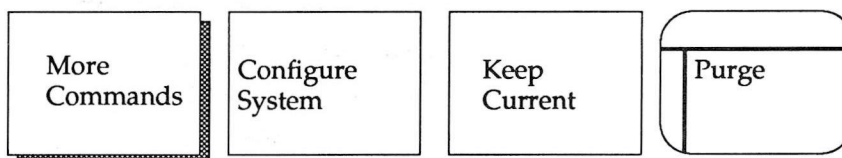
---

**CAUTION:** If you do not want to delete the file, do not press Enter.

5. To delete the file, press **Enter**. If you do not want to delete the file, press **F2** to return to the Keep Current Configuration menu.

## Purge

This command deletes all outdated .KCx files from a disk leaving only the most up-to-date algorithms.



To purge files from a disk, follow these steps:

1. Insert the disk with the .KCx files you want to purge into either disk drive.
2. When you select the Purge command, the dialog window fills with a directory listing of outdated Keep Current files found on both drives A and B (outdated Keep Current algorithm files have version numbers older than the current system software version number). UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the files you want to purge, press **F2**, insert another disk, and return to the beginning of this step.

3. In the Are you sure field, press **Y**.

---

**CAUTION:** If you do not want to purge files, do not press Enter.

4. To purge files displayed on the screen, press **Enter**. If you do not want to purge files, press **F2** to return to the Keep Current Configuration Operations menu.

If no more .KCx files are left on the disk(s), UniSite will return to the Keep Current Configuration menu.



## Device Checks

The commands on the Device Checks menu allow you to check devices you want to program and to check data in user memory. Commands available on this menu include the following:

- Sumcheck Display
- Compare Electronic ID
- Illegal Bit Check
- Blank Check
- Electronic Erase
- Under/Over-Blow (Logic Devices Only)

Before you can execute a command described in this subsection, you must do the following:

1. Select a device. For more information, see the section titled "Select a Device" earlier in this chapter.
2. Insert and lock a device into the socket. (This applies only if you are checking a device, not if you are checking User RAM.)

### Sumcheck Display

The sumcheck is a 4- or 8-digit hexadecimal number that, when compared to the original data, allows you to verify that a copy of the data matches the original data. Remember, you must select a device before you calculate the sumcheck. The sumcheck is computed by adding each 8-bit byte in the specified data range into a 32-bit result with the carry dropped.

Below, the options for sumchecking logic and memory are described, with logic devices explained first, followed by memory devices.

### Sumcheck Logic Device

If you have selected a logic device, then the Sumcheck Logic Device screen appears.



To sumcheck a logic device, follow these steps:

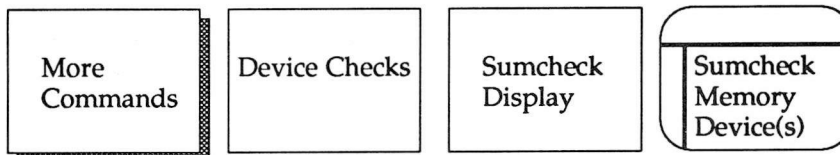
1. Select and socket a logic device.
2. Enter the parameters described below.
3. Press ☐ and UniSite calculates the 4-digit sumcheck of the fuse pattern. The sumcheck is displayed in the message bar.

The following parameters appear on this screen:

- **Source (R,D)** — Selects the source of the data to be sumchecked. Press ☐ to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file to sumcheck. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is `a:16r8.dat`.

## Memory Device Sumcheck

For memory devices, UniSite calculates and displays the sumcheck for a single device, for each device in a set, or for an entire set.



Follow the steps below to calculate the sumcheck for a memory device:

1. Select and socket a memory device.
2. Enter the parameters described below.
3. Press  and UniSite calculates the 8-digit sumcheck. The sumcheck is displayed in the message bar.

The following parameters appear on this screen:

- **Source (R,D)** — Selects the source of the data to be sumchecked. Press  to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file to sumcheck. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is **27C256.dat**.
- **Memory Begin Address** — Specifies the first address, in hex, of the first byte of data to be sumchecked. If the source is RAM, the Memory Begin Address is a beginning RAM address; if the source is disk, the Memory Begin Address is a beginning disk file address. The default address is 0.
- **User Data Size** — Specifies the hexadecimal size of the data block to sumcheck. This value is normally equal to the device size or a multiple of device size for sumchecking a set. Entering 0 resets User Data Size to the device size for sumchecking RAM or the file size for a sumchecking a data file.
- **Data Word Width** — Sets the word width, in bits, of the data to be sumchecked. For 8-bit (or larger) devices, the minimum word width is equal to the device word width and the maximum is 64. For 4-bit devices, valid choices are 4, 8, 16, and 32. Data Word Width should match the word width of the data bus in the target system for the device being programmed.
- **Total Set Size** — Specifies how many virtual devices are in the set to be sumchecked. Either enter a number between 1 and 99 or change one of the following parameters and UniSite will calculate the Total Set Size: Memory Begin Address, User Data Size, or Data Word Width. UniSite uses the following equation to calculate the Total Set Size:

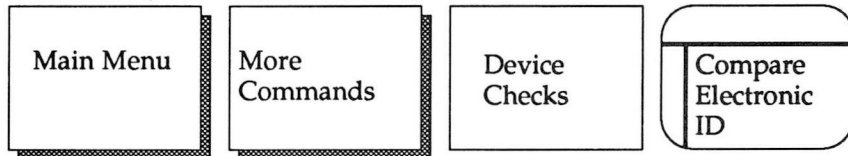
$$\text{TOTAL SET SIZE} = \frac{\text{USER DATA SIZE}}{\text{DEVICE BLOCK SIZE} \left( \frac{\text{DATA WORD WIDTH}}{\text{DEVICE WIDTH}} \right)}$$

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- **Next Operation Begins At** — A read-only field that specifies the address where the next sumcheck will start. This value is calculated from the Data Word Width, Device Block Size, Memory Begin Address, and device width.
- **For Member X of Y** — X specifies which device in the set is being sumchecked. Y, which is a read-only field, indicates how many devices are in the set(s). Values for X range from 1 to Y.
- **Individual Sumcheck** — A read-only field that displays the individual sumcheck for device number X.
- **Set Sumcheck** — A read-only field that displays the sumcheck for the entire set of Y devices.

## Compare Electronic ID

This feature compares the electronic ID of a device with the electronic ID specified in the selected algorithm, helping prevent accidental damage to a device.



To compare the electronic ID of a device with the ID stored in the selected algorithm, follow these steps:

1. Select and socket a device that supports electronic ID testing.

---

*Note: You cannot use an electronic ID to automatically select the proper algorithm to program a device. You also cannot use this feature on devices that do not support electronic ID testing.*

2. Press ☐ and UniSite compares the electronic ID of the socketed device against the electronic ID of the selected device. If the electronic ID of the socketed device matches the electronic ID of the selected device, you see the following message in the message bar:

```
OPERATION COMPLETE. Device = ssssssss
```

where ssssssss is the electronic ID of the socketed device.

3. If UniSite detects an electronic ID that does not match the selected device type, you see the following message in the message bar:

```
OPERATION FAILED: Electronic ID verify error. Device = ssssssss
```

where ssssssss is the electronic ID of the socketed device.

## Illegal Bit Check

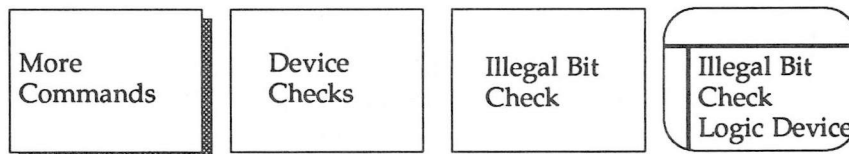
The Illegal bit test compares data in a device against data in UniSite's RAM to determine if the device has already-programmed locations of incorrect polarity. For example, UniSite returns an illegal-bit error in the following situation: data in RAM indicates a specific bit should be in an unprogrammed state while the corresponding bit in the device is in a programmed state. The device cannot be programmed if UniSite detects an illegal bit.

If UniSite detects an illegal bit, it displays an error message. If the device is erasable, the illegal bit can be corrected by erasing the device. The Illegal Bit Check is supported for both logic and memory devices, but is not supported for electronically erasable devices.



### Logic Device Illegal Bit Check

If you have selected a logic device, the Illegal Bit Check screen for logic devices appears.



To check a logic device for illegal bits, follow these steps:

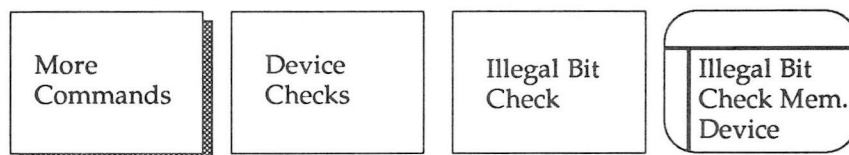
1. Select and socket a logic device.
2. Enter the parameters described below.
3. Press ☐ and UniSite begins the Illegal Bit Check. The results are displayed in the message bar.

The following parameters appear on this screen:

- **Source (R,D)** — Select the source of the data to be checked. Press ☐ to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file to use as the Source. This option appears if you specify disk as the data source. The filename must follow standard DOS conventions, and can include a drive designator. An example of a valid filename is 20V10.dat.

### Memory Device Illegal Bit Check

If you have selected a memory device, then the Illegal Bit Check screen for memory devices appear.



To check a memory device for illegal bits, follow these steps:

1. Select and socket a memory device.
2. Enter the parameters described below.
3. Press ☐ and UniSite begins the Illegal Bit Check. The results are displayed in the message bar.

The following parameters appear on this screen:

- **Source (R,D)** — Select the source of the data to be checked. Press ☐ to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the name of the disk file to check. This option appears if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is 20V10.dat.

- **User Data Size** — Specifies the size of the data block to check for illegal bits. This value is normally equal to the device size or a multiple of device size for checking illegal bits of a set. If you enter 0, it is reset to device size for RAM or file size for a file operation. User Data Size works with Total Set Size to determine the total amount of bytes to check in a set.
- **Total Set Size** — The total number of parts in the set to check for illegal bits.
- **Data Word Width** — Sets the number of bits in the Data Word Width. For 8-bit (or larger) devices, the minimum word width is equal to the device width, and the maximum is 64. For 4-bit devices, your word width choices are 4, 8, 16, and 32. This value should match the data bus word width in the target system for the device being programmed.
- **Next Device** — Type the number corresponding to the next device in the set to check for illegal bits.
- **Next Operation Begins At** — This field is read-only and cannot be altered. It appears only to inform you where (what hex address) the next operation begins.

## Blank Check

The Blank Check command checks a device, ensuring that it is blank.



To blank check a device, follow these steps:

1. Select and socket a device.
2. Press ☐ . UniSite checks the device and respond with

OPERATION FAILED: Non-blank device.

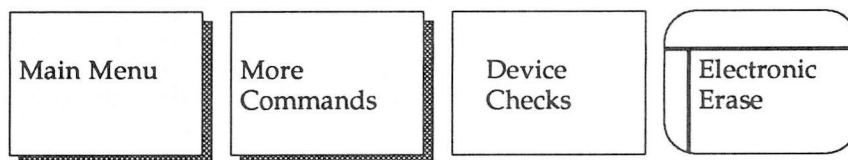
if the device is non-blank, or

OPERATION COMPLETE

if the device is blank.

## Electronic Erase

This command bulk erases an electronically erasable device.



To erase a device, follow these steps:

1. Select and socket an electronically erasable device.
2. Press ☐ to erase the device. When finished, UniSite displays the following message in the message bar:

Done.

3. If you try to erase a device that cannot be electronically erased, UniSite displays the following error.

Electronic bulk erase not supported by device.

---

*Note: You cannot access this screen if you have selected a device that cannot be electronically erased (a bipolar PROM, for example).*

*A blank check is run after a bulk erase operation if the blank check switch is enabled and if the selected device supports blank check.*

This device operation is not necessary for most electronically erasable devices. The Electronic Erase is part of the normal programming cycle. Before programming an electronically erasable device, UniSite checks the device and displays a warning if the device is non-blank. If you enable the erasing of the device, UniSite erases the device before programming the device.

## Under/Over-Blow (Logic Devices Only)

The under/over-blow feature compares the fuse map of a logic device with the fuse map in RAM or in a disk file.



An underblow condition means that the device's fuse is intact, but the data in memory indicates that it should have been blown. An overblow means that the device's fuse is blown, but should have remained intact. (The under/overblow feature is not supported for POF devices.)

To use the under/overblow feature, follow these steps:

1. Select and socket a logic device.
2. Enter the parameters described below.
3. Press ☐ to begin the test. The under/over-blow screen is displayed. If the data source does not have proper fuse data (for the specified device type), a message appears saying that the file is not initialized. Type ☐ to initialize the file.



4. With two exceptions, the data shown on the screen is displayed in a format similar to that of the fuse editor. The first exception is that additional character symbols are used to display overblown (B) and underblown (U) data. The second is that unlike the fuse editor, no data can be edited. The fuse number corresponding to the cursor's location appears at the top of the screen. To move the cursor, use the arrow keys. The editor commands are described later in this chapter.

The available parameters are described below.

- **Source (R,D)** — Select the source of the data to be compared against that of the device. Press **[Space]** to toggle between **R** (RAM) and **D** (disk).
- **Filename** — Specifies the name of the disk file to compare to the device. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is **b:16r8.dat**.

#### Under/Overblow Commands

Command	Keystrokes	Description
Next Block	<b>[Ctrl] + [N]</b>	Displays the next page of under/overblow data.
Prev Block	<b>[Ctrl] + [P]</b>	Displays the previous page of under/overblow data.
Jump to Fuse	<b>[Ctrl] + [B]</b>	Moves the cursor to a specific fuse. A highlighted area appears just after the " <b>^B: Jump to Fuse</b> " prompt at the bottom of the screen. Type in the fuse number that you want to jump to and press <b>[Enter]</b> .
Search Pattern	<b>[Ctrl] + [F]</b>	<p>Searches for one of four character symbols within the under/overblow data. The four characters you can search for are:</p> <p><b>X</b> (intact fuse) <b>-</b> (blown fuse) <b>B</b> (overblown fuse) <b>U</b> (underblown fuse)</p> <p>After you select the search character, the search begins at the current cursor position and continues until either a match is found or the end of the fuse map is reached.</p>
Exit	<b>[F2]</b>	Exits the Under/Overblow screen and returns UniSite to the Device Checks menu.

## Edit Data

Use the commands on the Edit Data menu to make changes to data stored in RAM or to data stored in a disk file. When you select the Edit Data command, UniSite displays a menu corresponding to the type of device that is currently selected. There are separate editors for memory and logic devices. For logic devices, there is a fuse map and test vector editor. For memory devices, there is a memory editor.

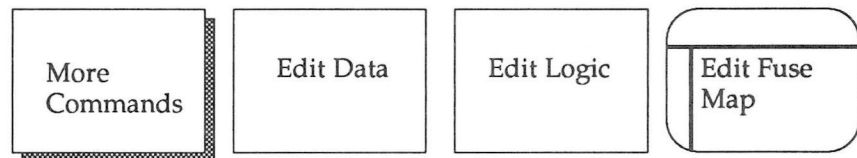
The commands on the Edit Logic menu is explained first, followed by the Edit Memory menu.

## Edit Logic Menu

The Edit Logic menu appears if you have selected a logic device. This menu contains the Edit Logic, Vector Edit, Fill Fuse Map, and Clear Vectors commands.

## Edit Fuse Map

This is the data editor for logic devices.



To edit fuse data, follow these steps:

1. Enter the parameters described below. If necessary, load the data into UniSite.
2. After you have selected the parameters, press **[J]**. The screen clears and show the fuse map data.
3. If the data source does not have proper fuse data, a message appears indicating the file is not initialized. Press **[C]** to initialize the fuse map to an unprogrammed (blank) state.
4. While editing, you can enter either data or commands. To edit the fuse map data, move the cursor to the fuse you want to change. Press **[Space]** to toggle the fuse to the desired state.

The fuse editor commands are described after the parameter list.

---

*Note: In general, any paging command or an exit command causes all currently displayed data to be written to the data source.*

The different options and commands for the editor are explained below.

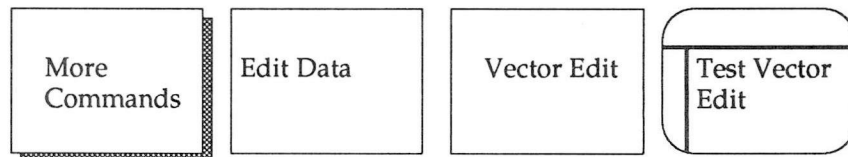
- **Source (R,D)** — Specifies the source of the data to be edited. Press **[Space]** to toggle between **R** (RAM) and **D** (disk).
- **Filename** — Specifies the name of the disk file containing the fuse data to edit. This option appears only if you select disk as the Source. The filename must follow standard DOS conventions.
- **Data Representation (X/-,0/1)** — Specifies how the data in RAM or data file appears on the terminal's screen. The two choices for this parameter are **X** and **-**, or **0** and **1**. Press **[Space]** to toggle between the two options. **X** and **0** represent an unprogrammed state; **-** and **1** represent a programmed state.

The commands described below are available when using the fuse editor.

Command	Keystrokes	Description
Prev Block	<b>Ctrl</b> + <b>P</b>	Displays the previous block of fuse data.
Next Block	<b>Ctrl</b> + <b>N</b>	Displays the next block of fuse data.
Jump to Fuse	<b>Ctrl</b> + <b>B</b>	Moves the cursor to a specific fuse. A highlighted area appears just after the ^B: Jump to Fuse prompt at the bottom of the screen. Type in the fuse number that you want to jump to and press <b>Enter</b> .
Restore Block	<b>Ctrl</b> + <b>U</b>	Returns the current page of fuse data to its original state (before editing that page). Only the data visible on the screen is affected by this command. This command works only if you have not moved off the currently displayed page of edit data since any changes were made.
Exit Editor	<b>F2</b>	Exits the fuse editor.

### Vector Edit

The vector editor allows you to edit test vectors you have created for a particular logic device.



To edit test vectors, follow these steps:

1. Set the parameters for test vector editing. The parameters are described below.
2. Press **Enter**. The screen displays the test vectors (if any) for the selected device.
3. If the source data does not match the device type selected, a message appears indicating the file is not initialized. Type **C** to initialize it.
4. While editing, you can enter either data or commands. You may type only certain test conditions and use only certain keyboard commands in the vector editor. The available editor commands are described after the parameter list.

The available parameters are described below.

- **Source (R,D)** — Specifies the source of the test vectors to be edited. Press **Space** to toggle between R (RAM) and D (Disk).

- **Filename** — Specifies the name of the disk file containing the test vector data to edit. This option appears only if you select disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is `a:16r8.dat`.
- **Edit Begin Vector** — Specifies the first test vector you want to edit. Move the cursor to the Edit Begin Vector field and enter the desired vector number. The vector number you type must be less than or equal to the last vector in RAM or the disk file. This field defaults to 1.

### Test Conditions

The test conditions and the allowed commands are listed in the following tables.

Vector Symbol	Description
0	Drives the specified input pin low.
1	Drives the specified input pin high.
2-9	Super-voltages, defined by the device's manufacturer.
B	Buried register preload.
C	Drives the specified input with a sequence of logic states: in this case, low, high and low (high clock).
D	A single transition that drives the specified input low using a fast slew rate
F	Specifies that a particular input or output pin is to be floated (tri-stated).
H	Verifies that the specified output pin is high.
K	Drives the specified input with a sequence of logic states: in this case, high, low, and high (low clock).
L	Verifies that the specified output pin is low.
N	Specifies that a particular input or output pin is floating (tri-stated). UniSite's F and N conditions perform the same function.
P	Identifies a preload vector and invokes a preload algorithm. This character is allowed on the clock pin ONLY; otherwise, it is treated as an X.
U	A single transition that drives the specified input high using fast slew rate; equivalent to C without returning to the low state. If more than 16 Ds or Us are used in any one test vector, the extra Ds or Us are ignored during test.
X	Ignores the state of an output pin. UniSite applies a logic level specified by a JEDEC file. X field value (1 or 0) or a low is used as the default value.
Z	Verifies the specified input or output pin has high impedance. UniSite will toggle pin using a small current during this test.

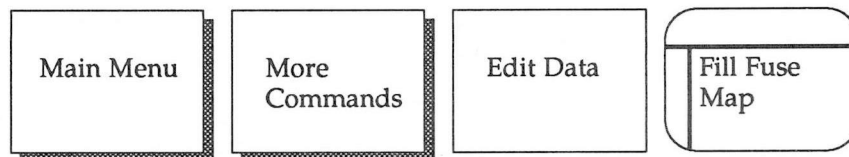
*Note: C, K, U, and D are clock functions that allow setup time.*

Vector Editor  
Commands

Command	Keystrokes	Description
Jump to Vector	<b>Ctrl</b> + <b>B</b>	Moves the cursor to a specific vector. A highlighted field appears just after the ^B: Jump to Vector prompt at the bottom of the screen. Enter the vector number to jump to and press <b>Enter</b> .
Delete Vector	<b>Ctrl</b> + <b>D</b>	Deletes the current vector where the cursor is located.
Insert Default	<b>Ctrl</b> + <b>I</b>	Inserts a default vector, which consists of a vector of all Xs (the character that expresses the ignore input and output test condition). Use the default vector for creating new test vectors. To create a new test vector, insert a default vector and change that vector to contain the test conditions that you specify; the legal test conditions are listed in the previous table. When you enter this command, the default vector is placed in front of the vector highlighted by the cursor.
Next Block	<b>Ctrl</b> + <b>N</b>	Displays the next block of vectors.
Prev Block	<b>Ctrl</b> + <b>P</b>	Displays the previous block of vectors.
Restore Block	<b>Ctrl</b> + <b>U</b>	Restores the current page of vector data to its original state (before editing this page began). Only the data visible on the screen is affected by this command. This command is effective only if there have been no paging commands since changes were made.
Save Vector	<b>Ctrl</b> + <b>W</b>	Saves the current vector (at the cursor) to a temporary buffer.
Repeat Saved	<b>Ctrl</b> + <b>V</b>	Inserts the vector that was last saved using the <b>Ctrl</b> + <b>W</b> command. When you execute this command, the saved vector is placed in front of the vector highlighted by the cursor.
Exit Editor	<b>F2</b>	Exits the vector editor and returns to the previous screen.

**Fill Fuse Map**

This command enables you to fill the fuse map with a variable.



This command is useful if you have loaded a fuse map into memory and you want to clear the fuse map from memory.

You can also perform this operation automatically as part of a download operation in two different ways. First, you can use the F field in a JEDEC file. Or second, you can enable the Fill Memory option on the Communication Parameters screen.

To fill the fuse map with a variable, follow these steps:

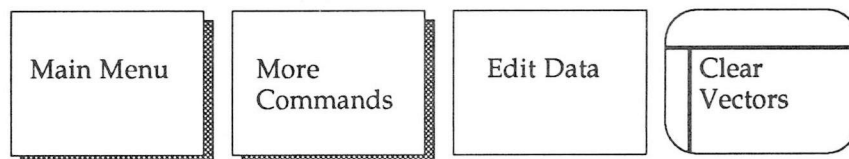
1. Enter the desired one-digit value (0 or 1) in the Fill Variable field. Press **Space** to toggle the variable between 1 and 0. 0 represents an unprogrammed state, while 1 represents a programmed state.
2. When the desired fill variable is displayed, press **↵**.
3. UniSite fills the fuse map with the specified variable. When done, UniSite displays

Done

in the message bar.

**Clear Vectors**

This command enables you to clear the current test vectors from memory.



To clear vectors, press **↵**.

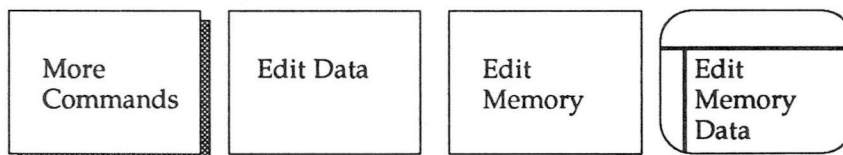
*Note: Only vectors in UniSite's RAM is cleared. This command cannot be used to clear vectors stored on a disk.*

**Edit Memory Menu**

The Edit Memory menu appears if you have selected a memory device. This menu contains the Edit Memory, Complement, Move Data, and Fill Memory commands.

**Edit Memory**

Use the Edit Memory command to edit the data for a memory device.



To edit data stored in memory, follow these steps:

1. Specify the memory editing parameters.
2. Press  to enter the editor. Depending on the selected word width, either the 4-, 8-, or 16-bit word width memory editor screen appears.
3. To change data on the screen, move the cursor to the memory location to change and type the new characters over the old ones. Enter the data either in hex or ASCII mode: select the mode using the TAB command (see below). When the cursor is moved around, its location is represented at the top of the screen as a hex address.

The editor commands are described following the parameter list.

The available parameters are described below.

- **Source (R,D)** — Specifies the source of the data to be edited. Press  to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the name of the disk file containing the data to edit. This option appears only if you select disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is **a:27c256.dat**.
- **Edit Data Word Width (4,8,16)** — Selects a 4-, 8-, or 16-bit Data Word Width. Press  to toggle between the 4-, 8-, and 16-bit options. If you select 8, the editor treats all addresses as byte addresses. If you select 16, the editor treats all addresses as word addresses and the Edit Odd/Even Byte Swap feature is enabled.
- **Edit Odd/Even Byte Swap (Y,N)** — Effects how the data is displayed on the Edit Memory screen. This option appears if the Edit Data Word Width is 16. This option does not alter the contents of the data in RAM and functions independently of the Byte Swap for Load, Program, and Verify operations. **Y** selects a Motorola representation (lo byte, hi byte) and does not swap bytes. **N** selects an Intel representation (hi byte, lo byte) and swaps bytes.
- **Edit Address Offset** — Specifies the address you want assigned to the first byte of data in user memory. Using the address offset can save much calculation time on files written on a host system and then downloaded to UniSite. For example, if your host system data file was written using a begin address of 1000H, you could specify an offset of 1000H. Edit data would then be displayed on UniSite's screen beginning with address 1000H.

- **Edit Begin Address** — Specifies the first address you wish to edit. Enter the 1- to 6-digit hex address. This address must be equal to or greater than the edit address offset. The edit address offset value subtracted from the edit begin address value cannot be greater than the user RAM size.

### Memory Editor Commands

Only certain keyboard commands may be used in the memory editor. The allowed commands are listed in the following table.

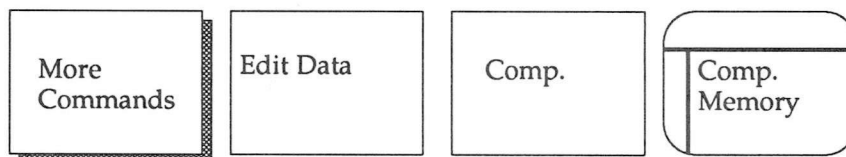
<b>Jump to address</b>	<b>Ctrl + B</b>	Moves the cursor to a specific memory address. When this command is selected, the cursor moves to the Jump to Address field. Enter the address you want to jump to and press <b>Enter</b> .
<b>Delete byte</b>	<b>Ctrl + D</b>	Deletes the entire byte with 8-bit data and deletes the entire word with 16-bit data. All the data after the current character position is moved one address position down. The end of RAM has an FF inserted. If a disk file is used, the file gets smaller.
<b>Exchange</b>	<b>Ctrl + E</b>	Allows you to search for a certain pattern and replace it with another pattern: <ol style="list-style-type: none"> <li>1. Press <b>Ctrl + E</b>. The cursor moves to the Exchange field at the bottom of the screen.</li> <li>2. Type the pattern to search for (any hex value up to 8 digits), followed by <b>Enter</b>. The cursor then moves to the With field at the bottom of the screen.</li> <li>3. Type the pattern you want inserted in place of the existing pattern, followed by a <b>Enter</b>. If the pattern cannot be found, a message is displayed and the cursor remains in its original position.</li> </ol> <p>When exchange data is entered in 4-bit mode, the upper nibble of data is blank so only up to four characters can be entered in the field.</p>
<b>Next Block</b>	<b>Ctrl + N</b>	Displays the next block of memory data.
<b>Prev Block</b>	<b>Ctrl + P</b>	Displays the previous block of memory data.
<b>Restore Block</b>	<b>Ctrl + U</b>	Returns the current page of data to its original state (before editing began). The page is restored only if there had been no paging commands.



Search Pattern	<b>Ctrl</b> + <b>F</b>	<p>Allows you to search for a particular hex pattern of up to 8 digits:</p> <ol style="list-style-type: none"> <li>1. Press <b>Ctrl</b> + <b>F</b> . The cursor moves to the Search field at the bottom of the screen.</li> <li>2. Type in the pattern to search for (any hex value up to 8 digits), followed by <b>Enter</b> . If the pattern cannot be found, a message is displayed and the cursor remains in its original position.</li> </ol> <p>When searching for data in 4-bit mode, the upper nibble of data is blank so only up to four characters can be entered in the search field.</p>
Start/Stop Insert	<b>Ctrl</b> + <b>I</b>	<p>Toggles the state of the Insert mode between Insert and Overtyping. If the Insert field is displayed in reverse video, the editor is in Insert mode. If the Insert field is displayed in normal video, the editor is in Overtyping mode.</p> <p>In Insert mode, data is inserted at the current cursor position, and all data after that is moved up into higher memory or file addresses. If editing a RAM file, data at the end of RAM is lost. If editing a disk file, the file gets larger. The insert is not complete until the last hexadecimal character (8- or 16-bit) is entered. The cursor moves by byte for 8-bit data or by word for 16-bit data.</p> <p>In Overtyping mode, data entered replaces the current data. When not in insert mode, the arrow keys move the cursor by character.</p> <p>For 8-bit data, the data is entered in bytes, and for 16-bit data, the data is entered in words.</p>
Exit Editor	<b>F2</b>	<p>Exits the memory editor and returns UniSite to the Edit menu.</p>
Toggle Hex/ ASCII Modes	<b>Tab</b>	<p>Toggles the mode for data entry. When in hex mode, data is entered on the left side of the screen and the only valid entries are hex characters. When in ASCII mode, data is entered on the right side of the screen and any printable ASCII character can be entered. ASCII mode is not allowed when in 4-bit mode.</p>

## Complement Data

The Complement command converts each bit of data within the specified data block to its opposite value (one's complement).



To complement data stored in memory, follow these steps:

1. Specify the parameters described below.
2. Press  to begin the complement function. UniSite displays the following message when the operation is completed.

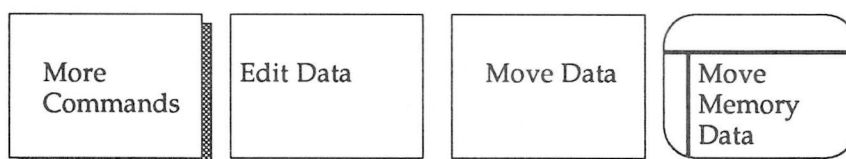
Done

The available parameters are described below.

- **Memory Address** — The memory address at which the complement operation begins. The value entered may be any 1- to 6-digit hex address. The address cannot be greater than the User RAM size.
- **Block Size** — The number of bytes (in hex) that is complemented. Move the cursor to the block size window and enter the block size (from 1 to 6 hex digits). The block size, added to the memory address, cannot exceed the user memory size.

## Move Data

The Move Data command moves a block of data from one location to another.



To move data stored in memory, follow these steps:

1. Specify the parameters described below.
2. Press  to begin the move function. UniSite displays the following message when the operation is completed.

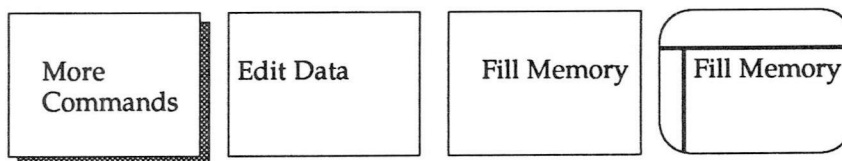
Done

The available parameters are described below.


- **From Memory Address** — The first memory address of the data block you want to move data from. Enter any 1- to 6-digit hex address. The address cannot be greater than the user RAM size.
- **To Memory Address** — The first address of the data block you want to move data to. Enter any 1- to 6-digit hex address. The address cannot be greater than the user RAM size.
- **Block Size** — The size (in hex) of the data block to be moved. If the sum of the block size and either the From Memory or the To Memory address values exceed user memory size, a warning message is displayed.

## Fill Memory

The Fill Memory command fills a specified block of data with a 2-digit hex value.



To fill a block of memory, follow these steps:

1. Specify the parameters described below.
2. Press  to begin the Fill function. UniSite displays

Done

when the operation is completed.

The available parameters are described below.

- **Memory Begin Address** — The memory address at which the fill operation begins. Enter any 1- to 6-digit hex address. The address cannot be greater than the user RAM size.
- **Block Size** — The number of bytes (in hex) that is filled. Move the cursor to the block size window and enter the block size (from 1 to 6 hex digits). The block size, added to the memory address, cannot exceed the user memory size.
- **Fill Variable** — The 2-digit hex data variable that is used to fill the specified block. Enter any value between 00 and FF.

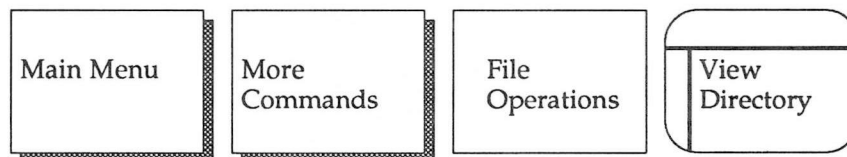
## File Operations

From the File Operations menu, you can access several file manipulation and directory commands. These functions help you move and copy files, view file directories, and organize and maintain your disks. The following sections describe each of the File Operations commands in the order that they appear on the file menu screen.

*Note: A file disk has a capacity of 720KB or 112 files, whichever comes first.*

### View Directory

This command displays the file directory of the disk in the disk drive.



To view a directory, follow these steps:

1. Insert the disk you want to view into the disk drive.
2. Press **↓** to view the directory. The View Directory command can view the directory of any DOS-compatible 3.5" disk. On dual-drive UniSites, the files on drive A are displayed first.
3. UniSite displays 28 files at one time. If your disk(s) contains more than 28 files, they are displayed on the next page(s). Press **Ctrl** + **N** to advance to the next page of files.

**Load File**

This command loads a disk file into RAM. Do not use this command to load files from a PC or from a file server. See the Download Data command for information on transferring files to UniSite from a PC or from a file server.



To load a file into UniSite's RAM, follow these steps:

1. Insert the disk containing the file you want to load into the disk drive.
2. When you select the Load File command, the dialog window displays a directory of the disk in the disk drive. If you do not see your file, press **[F2]** to return to the File Operations menu. Insert the disk containing your file into the disk drive and return to the beginning of this step.
3. UniSite displays 28 files at one time. If your disk has more than 28 files, they are displayed on the next page(s). Press **[Ctrl] + [N]** to advance to the next page of files.
4. Specify the parameters described below. Be sure to include a filename.
5. Press **[Enter]** to begin the loading. Once the disk file is in RAM, you may perform several operations on the file, such as edit or program device; refer to these subsections of the Command chapters for more information on editing and programming.

---

*Note: The User Data Size field does not appear on the Load File screen. However, this parameter is still updated to reflect the size of the file loaded for use in other screens.*

The available parameters are described below:

- **Filename** — Specifies the name of the disk file to load. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename would be **b:27c256.dat** or **a:16l8.dat**.
- **Memory Begin Address** — Specifies the first address in memory to load data into. This option appears only if you have selected a memory device. The default address is 0.

If you selected a logic device, the fuse map and vectors from the disk is loaded.

If your files contain data formatted in other than RAM Image Binary (Intel Hex, format 83, for example), use the Transfer Data/Input From Disk command.

## Save File

This command allows you to save the data in RAM to a disk file. Do not use this command to save a file on a PC or a file server. See the Upload Data command for information on transferring files to a PC or a file server from UniSite.



To save data in RAM to disk, follow these steps:

1. Insert the disk you want to save the data to in the disk drive.
2. When you select Save File, the dialog window fills with a directory of the disk in the disk drive. If you do not want to save your file to this disk, press **[F2]** to return to the File Operations menu. Insert the disk you want to save the data to into the disk drive and return to the beginning of this step.
3. Specify the parameters described below. Be sure to include a filename.
4. Press **[↵]** to begin the save.

---

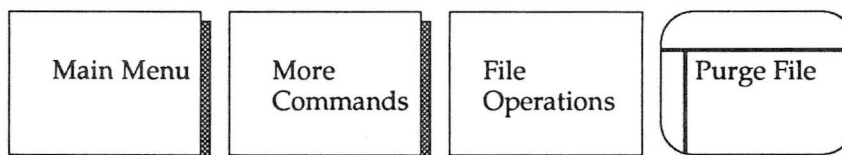
*Note: If you are saving information for a logic device, the fuse map, security fuse state, and vectors are saved.*

- **Filename** — Specifies the name of the disk file to save RAM data into. This may be a new filename, or an existing filename that you want to overwrite. If you are writing to an existing file, the data previously in the file is replaced by the new data. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename would be **a:27c256.dat** or **b:16l8.dat**.
- **Memory Begin Address** — Specifies the first address in RAM to take data to be saved. This option appears only if you have selected a memory device. The default address is 0.
- **User Data Size** — Specifies the size, in hex bytes, of the data block to save. This value is normally equal to the device size. This option appears only if you have selected a memory device.

A saved file is stored in RAM Image Binary format. If you want to store a file in some other format, use the Transfer Data/Output to Disk command.

**Purge File**

This command deletes a file, or group of files, from a disk.



To purge a file from a disk, follow these steps:

1. Insert the disk with the file you want to delete into one of the disk drives.
2. When you select the Purge File command, the dialog window fills with a directory listing. UniSite displays up to 28 files at one time. If there are more than 28 files, press **Ctrl** + **N** to display the next screen of files. Press **Ctrl** + **P** to display the previous screen of files.

If you do not see the file you want to delete, press **F2**, insert another disk, and return to the beginning of this step.

3. Move the cursor to the Filename field and enter the name of the file you want to delete. Remember to specify which drive holds the file you want to delete.

---

*Note:* You can use an asterisk (\*) as a wildcard. For example, to purge both 27512.dat and 27128.dat, you could type 27\*.dat.

4. Move the cursor to the Are you sure field and press **Y**.

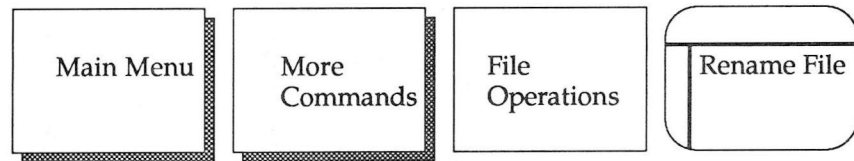
---

**CAUTION:** If you do not want to delete the file, do not press Enter.

5. To delete the file, press **Enter**. If you do not want to delete the file, press **F2** to return to the File Operations menu.

## Rename File

This command changes the name of a file.



To rename a file, follow these steps:

1. Insert the disk with the file you want to rename into one of the disk drives.

---

*Note:* You cannot rename a file to a different disk drive than the current one displayed on the screen.

2. When you select the Rename File command, the dialog window fills with the directory listing. UniSite displays up to 28 files at one time. If there are more than 28 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the file you want to rename, press **F2**, insert another disk, and return to the beginning of this step.

3. Move the cursor to the From field and enter the current name of the file you want to rename. Remember to specify which drive holds the file you want to rename.
4. Move the cursor to the To field and enter the new name for the file you want to rename. Remember to specify which drive holds the file you want to delete.

---

**CAUTION:** If you do not want to rename the file, do not press Enter.

5. To rename the file, press **Enter**. If you do not want to rename the file, press **F2** to return to the File Operations menu.



## Copy File

Use the Copy command to copy a file or a group of files.



To copy a file (or group of files), follow these steps:

1. Insert the disk with the file you want to copy into one of the disk drives.

The Copy command can be used on either a single- or a dual-drive UniSite.

2. When you select the Copy File command, the dialog window fills with the directory listing. UniSite displays up to 28 files at one time. If there are more than 28 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the file you want to copy, press **F2**, insert another disk, and go back to step 1.

3. Move the cursor to the From field. Enter the name of the source file. Remember to specify which drive holds the file(s) you want to copy.
4. Move the cursor to the To field and enter the name of the destination file. Remember to specify which drive holds the file(s) you want to copy.
5. Move the cursor to the Single Drive File Copy to Different Disk parameter. If you want to copy the file to a different disk and use the same drive, set this parameter to Y. UniSite prompts you to insert the source disk or destination disk at the appropriate times. This operation results in RAM being used as a temporary storage buffer and alters the contents of RAM

---

*Note: When copying with the Single Drive File Copy to Different Disk parameter set to N, you are prompted to swap disks when necessary. Only one file at a time can be copied using this method.*

Otherwise, if you want to copy the file from one drive to the other on a dual-drive UniSite or to the same disk on either a single- or a dual-drive UniSite, set this parameter to N. Make sure the destination file has a different filename than the source file.

---

*Note: When copying with the Single Drive File Copy to Different Disk parameter set to N, you can copy a group of files by using an asterisk (\*) as a wildcard in the name of the source and destination file.*

---

**CAUTION:** If you do not want to copy the file, do not press Enter.

6. To begin the copying, press **Enter**. If you do not want to copy the file, press **F2** to return to the File Operations menu.

## Duplicate Disk

Use this command to duplicate an entire disk.



To duplicate an entire disk, you can use either the Duplicate Disk command, or you can use the DOS DISKCOPY command.

### Using DOS

If you have access to a DOS-based PC with a 3.5" disk drive, we suggest that you use the DOS DISKCOPY command to make a copy of your Algorithm disk and System disk. If you use DOS, make sure you use DISKCOPY and not COPY. The backup must be an exact, bit-for-bit, sector-for-sector copy of the original. For more information, see your DOS manual.

### Using a Dual-drive UniSite

Follow the steps below to duplicate a disk on a UniSite with two disk drives. If your UniSite has one disk drive, skip to the section titled "Using a Single-drive UniSite."

1. Insert the disk you want to duplicate (the source disk) into drive A.

---

**CAUTION:** *Do NOT use the Algorithm disk or the System disk as the destination disk because the original contents of the destination disk will be lost.*

2. Insert the blank disk (the target disk) into drive B.
3. If you want to duplicate the disk, move the cursor to the **Are you sure?** field and press **[Y]**.

---

**CAUTION:** *If you do not want to duplicate the disk, do not press Enter; this operation erases the contents of the destination disk. Also, this operation uses RAM as a temporary storage buffer and alters the contents of RAM.*

4. Move the cursor to the Do You Want To Verify Disk field and enable the disk verification procedure.

To disable the verification, and speed up the process, press **[N]**. To enable the verification, press **[Y]**.

5. Finally, press **[J]** to begin the disk duplication.

---

**Note:** *After every disk duplication operation, the verification parameter returns to Y and the Are you sure parameter returns to N.*

**Using a  
Single-drive  
UniSite**

To use a single-drive UniSite to duplicate a disk, follow these steps:

---

*Note: Regardless of whether you use DISKCOPY or Duplicate Disk to duplicate a disk we recommend that you write protect your source disk before you duplicate the disk. To write protect a disk, slide the write protect tab on the disk so you can see through the hole which it exposes. See your DOS user's manual for more information on duplicating a disk.*

1. Insert the disk you want to duplicate into the disk drive.

---

**CAUTION:** *Do NOT use the Algorithm disk or System disk as the destination disk because the original contents of the destination disk will be lost.*

2. If you want to duplicate the disk, move the cursor to the Are You Sure? field and press **Y**.

---

*Note: Because UniSite has only one disk drive, the source disk and destination disk parameters are currently fixed at A.*

---

**CAUTION:** *If you do not want to duplicate the disk, do not press Enter; this operation erases the contents of the destination disk. Also, this operation uses RAM as a temporary storage buffer and alters the contents of RAM.*

3. Move the cursor to the Do you want to verify disk? field and enable the disk verification procedure.

To disable the verification, and speed up the process, press **N**. To enable the verification, press **Y**.

4. Finally, press **↵** to begin the disk duplication.

During the duplication you are prompted when to swap disks.

---

*Note: After every disk duplication operation, the verification parameter returns to Y and the Are you sure parameter returns to N.*

## Format Disk

Use this command to prepare a data disk for use. A disk must be formatted before it can be used.



To format a disk, follow these steps:

1. Insert the disk to be formatted into either disk drive.
2. Press **[Space]** to select the drive that the new disk will be in when formatting. For single disk drive systems, you are restricted to drive A.
3. Move the cursor to the **Disk Integrity Check** field and select whether or not you want UniSite to perform a disk integrity check. If enabled, the check is performed while the disk is being formatted, and looks for bad sectors on the disk. Although this test does take more time to complete, it helps ensure the integrity of the newly formatted disk.

To enable the disk integrity check, press **[Y]**. To disable the disk integrity check, press **[N]**.

4. When you are ready to format the disk, type **[Y][Enter]** at the **Are You Sure?** prompt.

If you are not ready to format a disk, press **[F2]** to return to the File Operations menu.

5. UniSite checks the disk in the disk drive, making sure it is not a System disk. If it is an Algorithm disk or a System disk, UniSite displays the following message:

WARNING: system disk in drive. Hit return to continue,  
^Z to abort.

---

**CAUTION:** *Do NOT format a UniSite Algorithm disk or System disk because the original contents of the disk will be lost.*

To format an Algorithm disk or System disk, press **[Enter]**. If you do not want to format an Algorithm disk or a System disk, press **[Ctrl] + [Z]**.

## Job File

Using the Job File feature, you can record a series of keystrokes which can then be replayed later.

Job files allow you to perform setup operations without re-keying all the parameters each time a new device is selected. For example, if you regularly program five different devices, you could create and save five different job files, each specifying particular options for a device.

You may store up to 10 job files on each System disk. Each job file may contain up to 499 keystrokes, although a typical job file contains 10 to 20 keystrokes. Job files can be viewed with the View Directory command, where they appear as JFN.JOB, where *N* is a number between 0 and 9. For example, if you have two job files on a disk, they may show up as JF0.JOB and JF2.JOB. If you have job files on another disk, insert the disk and press **[F4]** to display the job file directory for the current disk. Whenever you change disks with job files on them, pressing **[F4]** displays the current job file directory.

### Suggestions on Construction of a Job File

You should not include any Quick Copy commands in your job files. Also, you should not include any operations requiring the insertion or removal of a disk or module. This is because a job file does not stop until the entire file has been played back.

The first command in a job file should be **[F1]**. This way, your job file always starts from the Main Menu, preventing "runaway" job files.

---

*Note: Because screens and key functions may change when the software is updated, a particular job file may only be used with the version of software it was created with. For example, if you created a job file with one version of software, you should re-create the job file so it is compatible with the new software.*

### Recording a Job File

To record a job file, follow these steps:

1. Press **[Esc] [Ctrl] + [J]** to start recording the job file. Each keystroke entered from now on is stored in the job file.
2. Press **[F1]** as the first command in your job file. (Although this is not necessary, it helps prevent "runaway" job files.)
3. Enter all the parameters you want recorded. For example, you might want to select a device and then choose its programming parameters by using the Edit Programming Parameters command.
4. When you have entered all the keystrokes you want to store in the job file, press **[Esc] [Ctrl] + [J]** to stop recording the job file. The Job File screen appears.
5. Select a file number to store the newly created job file in. For example, if you want this job file to appear as job file number five on the Job Files screen, press **[5] [↵]**. If you select a file number already in use, UniSite prompts you to press **[↵]** to overwrite the existing file. If you want to preserve the existing job file, press **[Ctrl] + [Z]**.

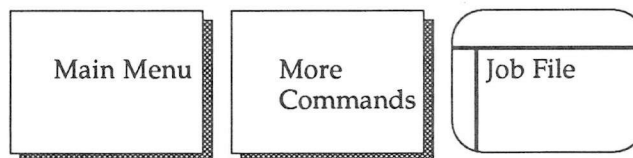
6. Move the cursor down to the **Enter Description** field and type in a name for the job file that has just been recorded. The description can be up to 31 characters long and should be followed by **[J]**.

To save the job file, press **[J]**. While saving, the action symbol rotates. When done, you are returned to the last screen displayed during job file recording.

To not save the job file, press **[F2]** or **[F1]**.

### Playing Back a Job File

Use the Job File command to play back a pre-recorded job file.



To play back a job file, follow these steps:

1. Go to the Job Files screen.
2. You see a listing of the job files stored on the disk in the disk drive. To select a job file from this disk, type the number of the job file you want to play back and press **[J]**. For example, to play back the fifth file on the list, press **[5][J]**.

To view a list of job files stored on another disk, insert the disk and press **[F4]**. Pressing **[F4]** reconstructs the job file directory.

3. UniSite now plays back the keystrokes that were recorded. Each screen displayed while you were recording keystrokes is shown (briefly).
4. After the job file is played back, UniSite displays the following message in the message bar:

Job file playback ended

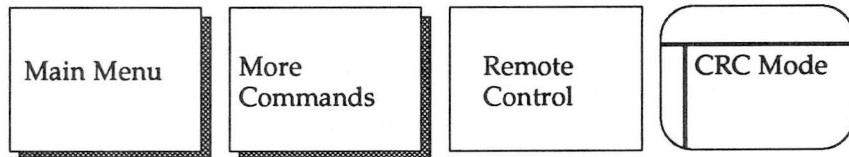
The last screen recorded while you were creating the job file is now displayed. If an error occurred during playback, an error message is displayed and the job file must be re-recorded).

---

*Note: Because screens and key functions may change when the software is updated, a particular job file may only be used with the version of software it was created with. For example, if you created a job file with one version of software, you should re-create the job file so it is compatible with the new software.*

## Remote Control

This command puts UniSite in Computer Remote Control mode.

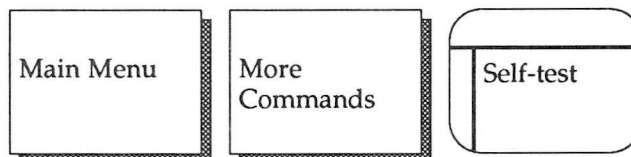


Chapter 2, "Setup and Installation," provides instructions on how to set up your system. Chapter 6, "Computer Remote Control," provides information on how to use CRC and describes the CRC command set.

To exit remote control, type **Ctrl** + **Z** on the terminal's keyboard, or send a **Z** **J** command from the host computer.

## Self-test

The Self-test command allows you to test circuits and subsystems in UniSite, verifying proper operation or isolating possible problem areas.



An automatic self-test is also performed each time UniSite is powered up. If errors occur during the power-up test, the Self-test screen is displayed, showing the areas that failed.

---

*Note: For details (help) on the function of each self-test, move the cursor to the test you want information about and press F3.*

### Halting a Self-test

You can stop a self-test anytime during its operation. To halt a self-test, press **Ctrl** + **Z**.

### Running the Self-test

To perform a Self-test, follow these steps:

1. Make sure all device sockets are empty.

---

**CAUTION:** *Executing the System RAM test or the User RAM test erases any data in RAM.*

2. Select the test mode. You can select either one-pass or continuous testing. To toggle modes, move the cursor to the Test Mode prompt and press **Space**. One Pass testing runs the specified test once. Continuous testing runs the specified test until there is a failure or until you halt the procedure by pressing **Ctrl** + **Z**.

---

*Note: There may be a delay before UniSite responds to the Ctrl-Z if the programmer is running the system RAM test.*

3. To test all hardware, move the cursor to the **Perform All Tests** prompt and press **J**. To test a particular item, move the cursor to the desired test and press **J**.

## Interpreting Self-test Results

Four conditions are used as status indicators on the self-test screen:

? UNTESTED

P PASS

F FAIL

- NOT INSTALLED

When testing begins, a ? appears next to the untested areas. As each test completes, either P (pass) or F (fail) appears next to the test name, showing the results of the test performed.

If a hardware item is not installed, a - appears.

For example, if you are testing the Pin Driver boards on a UniSite that has ten Pin Driver boards installed (UniSite can hold 17), ten ? symbols and seven - symbols appear before the testing begins. After testing, UniSite displays ten P symbols and seven - symbols if all the Pin Driver boards pass.

During testing, the message area of the self-test screen indicates that testing is in progress. During the System RAM test, the Remote and the Terminal indicators blink to indicate that testing is in progress.

If ? symbols still appear next to some test names when the testing has completed, it may be because some other test(s) need to pass before the indicated one may be tested. For example, the Waveform board test must pass before the Pin Control Unit test executes. All the installed UniSite hardware must pass self-test.

---

*Note: All of the installed UniSite hardware must pass self-test before any other operations can take place.*



## Transfer Data

Use the commands on the Transfer Data menu to move data files back and forth between UniSite and the host computer.

The Transfer Data menu contains the following seven commands: Download Data, Upload Data, Compare Data, Format Select, Input From Disk, Output to Disk, and Serial Output. Each of these commands is described in this subsection.

### Download Data

Use the Download Data command to specify downloading parameters and to execute the download operation.



Downloading moves a data file from a host computer to UniSite's RAM or disk.

Before you download data, specify the variables for the parameters listed below, then enter a command in the **Download Host Command** field. The information in the command line is a command that your host computer (the computer containing the file to download) recognizes as an instruction to begin the download operation. Finally, press  to execute the download. UniSite displays

Data transfer complete

in the message area when the download is complete.

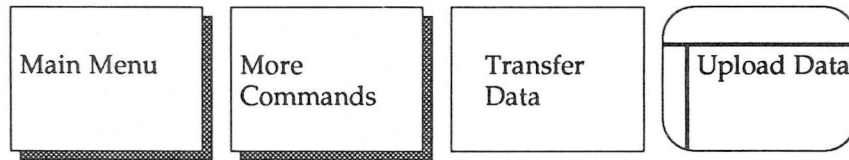
- **Source (R,T)** — Specifies which of UniSite's ports is connected to your host computer. Press  to toggle between R (Remote port) and T (Terminal port).
- **Destination (R,D)** — Specifies the destination of the data that is being downloaded from the host computer. Press  to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file in which to save the downloaded file. This option appears only if you specify disk as the Destination. The filename must follow standard DOS conventions, and can include a drive designator. An example of a valid filename is `a:27256.dat`.
- **I/O Translation Format** — Selects the translation format of the data in the file. A list of formats UniSite supports is available on the Format Select screen in the Transfer Data menu, and also in the front of Chapter 7 of manual. If you know the number for your format, you can enter it from this screen. If you do not know the correct code number, go to the Format Select screen, find the format you want and enter the correct number from that screen. Entering the format number from the Format Select screen changes the Translation Format parameter on this screen. If you are using the Altera POF format, you must select the desired POF device before you perform a data transfer operation.

- **I/O Addr Offset** — Enter either the beginning hex address of the host computer's data file or the first address you want to capture within a file. This field appears only when a non-JEDEC format has been selected. UniSite subtracts this address from addresses received to determine where, either in the user RAM or in the disk file, the data will be loaded. Entering FFFFFFFF sets the first address received as the I/O offset for the rest of the download.
- **Memory Begin Address** — Specifies the first address, in hex, where the first byte of data is stored from the source port. This field appears only when a non-JEDEC format has been selected. If the destination is RAM, it is a beginning RAM address; if the destination is disk, it is a beginning disk file address. The default address is 0.
- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block to be downloaded. This field appears only when a non-JEDEC format has been selected. The default is 0, which directs UniSite to receive all the data in the file. After the download is complete, a value equal to the number of bytes received is set here. If a value less than the size of the data received is entered, only the number of bytes equal to that value are actually stored.
- **Download Host Command** — Enter the appropriate host command line here to download the data. This line may be up to 58 characters long. UniSite generates a return character to terminate the line when transmitted to the host. To clear a previously entered command, enter a blank command by pressing **Space** **↵**.

If you are using HiTerm, you should use the **TR filename** command, where *filename* is the name of the file to download. For more information, see the *HiTerm User Manual* at the back of this binder. For an example of using HiTerm to download data from a PC, see Session 7 in Chapter 4.

## Upload Data

Use the Upload Data command to specify uploading parameters and to execute the upload operation.



Uploading moves a data file from UniSite's RAM or disk to the host computer. To upload a data file, follow these steps:

1. Before you upload data, specify the variables for the parameters listed below.
2. Enter a command in the Upload Host Command field. The information in the command line is a command that your host computer (the computer receiving the data file) recognizes as an instruction to begin the upload operation.
3. Press  to start the upload. During the upload, the action symbol rotates. When done with the upload, UniSite displays the following message in the message bar:

```
Data Transfer complete. Data sum = xxxxxxxx
```

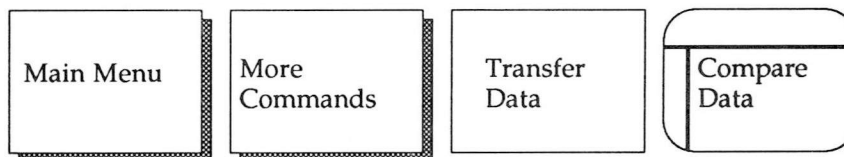
The available parameters are described below.

- **Source (R,D)** — Specifies where the data to be uploaded is located. Press  to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file to upload to the host. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can include a drive designator. An example of a valid filename is **b:27256.dat**.
- **Destination (R,T)** — Specifies which port the data file is sent through. Press  to toggle between R (Remote Port) and T (Terminal Port).
- **I/O Translation Format** — Specifies the translation format in which the file is to be generated. The format specified here must be the same as that expected by the host computer. A list of formats supported by UniSite appears on the Format Select screen in the Transfer Data menu, and also in the front of Chapter 7 of manual. If you know the number for your format, you can enter it from this screen. If you do not know the format number, go to the Format Select screen, find the format you want and enter the number from that screen. Entering the format number from the Format Select screen changes the Translation Format parameter on this screen.
- **I/O Addr Offset** — Enter the beginning address of the upload file. This field appears only when a non-JEDEC format has been selected. This value is added to the address of the data in memory (relative to the Memory Begin Address of 0) and output as the I/O address. A value of FFFFFFFF sets the I/O Offset to 0.

- **Memory Begin Address** — Specifies the first address, in hex, from where the first byte of data is retrieved. This field appears only when a non-JEDEC format has been selected. If the source is RAM, it is a beginning RAM address. If the source is Disk, it is a beginning disk file address. The default address is 0.
- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block to be uploaded. This field appears only when a non-JEDEC format has been selected. Enter the value of the number of bytes to upload. Entering 0 directs UniSite to upload the entire contents of UniSite's RAM. Or, if Disk is specified as the Source, entering 0 directs UniSite to upload the entire disk file.
- **Upload Host Command** — Enter the appropriate host command line here to direct the host to accept the uploaded data. This line may be up to 58 characters long. UniSite generates a return character to terminate the line when transmitted to the host. To clear a previously entered command, enter a blank command by pressing **[Space]** **[↵]**.

## Compare Data

The Compare Data command compares data in user memory with the data file downloaded from the host computer.



This command is useful if you want to verify that you transferred a complete and accurate copy of a data file.

The current I/O format is used to translate the incoming data from the serial port. (JEDEC format cannot be used with this command.) This operation is identical to a downloading operation, except data is compared with, rather than written to, memory.

1. Before you compare data, specify the variables for parameters listed below.
2. Enter a command in the Download host command field. The information in the command line is a command that your host computer recognizes as an instruction to begin the download operation.

3. Press ☐ to start this command. UniSite displays the following message if the two data files are identical.

Data transfer complete

If the data files are NOT identical, UniSite displays the following message:

Data verify error. Data sum = XXXXXXXX

If data in memory does not correspond with data sent from the host, and the terminal is not on the same port as the port receiving the data from the host, UniSite displays the following message:

compare fail at AAAAAA:XX not YY

where AAAAAA is the address, XX is the memory data, and YY is the host's data.

If the terminal is on the same port, then the following message is displayed:

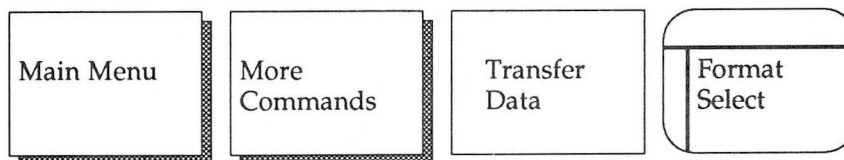
Data verify error. Data sum = ssssssss

- **Source (R,T)** — Specifies which of UniSite's ports is connected to the computer with the data file that is to be used to compare with the memory data. Press ☐ to toggle between R (Remote port) and T (Terminal port).
- **Data Location (R,D)** — Specifies where the data to be compared is located. Press ☐ to toggle between R (RAM) or D (disk).
- **Filename** — Specifies the name of the disk file you want compared. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename would be a:27256.dat.
- **I/O Translation Format** — Specifies the data translation format of the data in the file. A list of formats UniSite supports is available on the Format Select screen in the Transfer Data menu, and also in the front of Chapter 7 of manual. If you know the number for your format, you can enter it from this screen. If you do not know the format number, go to the Format Select screen, find the format you want, and enter the format number from that screen. Entering the format number from the Format Select screen changes the Translation Format parameter on this screen.
- **I/O Addr Offset** — Specifies the beginning address of the downloaded data file to be compared. This field appears only when a non-JEDEC format has been selected. Entering FFFFFFFF causes UniSite to default to the first incoming address as the lowest address to be compared.
- **Memory Begin Address** — Specifies the first hexadecimal address of data to compare with data from the Source port. If the data location is RAM, it is a beginning RAM address. If the data location is Disk, it is a beginning disk file address. This field appears only when a non-JEDEC format has been selected. The default address is 0.

- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block to be downloaded and compared from the Source to the data location. This field appears only when a non-JEDEC format has been selected. Normally, you should enter a zero here so all of the data is compared. After the compare operation is complete, a value equal to the number of bytes compared is set here. If a value less than the size of the data received is entered, only the number of bytes equal to that value are actually compared.
- **Download Host Command** — Enter the appropriate host command line here to download the data. This line may be up to 58 characters long. UniSite generates a return character to terminate the line when transmitted to the host. To clear a previously entered command, press **Space** then **↵**.

### Format Select

The Format Select command selects the translation format to use.

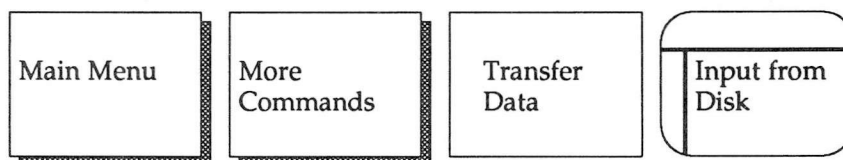


Translation formats (a form of transmission protocol) are used when uploading/downloading data between UniSite and a host computer. Only the formats listed in the Translation Formats chapter of this manual are recognized by UniSite. If your host computer does not generate code into one of the listed formats, edit it to match one of the supported formats.

The Format Select screen displays a list of all UniSite supported formats to choose from. At the bottom of this screen is a format entry field. Enter the number of the format that you want to use and press **↵**. When you select a translation format from this screen, the same format is entered in all of the other Transfer Data screens (i.e., Download Data, Compare Data, etc.).

## Input From Disk

Use the Input From Disk command to load a data file from disk if the data is stored in a translation format. Depending on the settings of the Destination parameter, the data in the disk file is loaded into either RAM or into another disk file.



To input a data file from disk, follow these steps:

1. Insert the disk containing the file to input into the drive.
2. Specify the settings for the parameters listed below.
3. Press  to start this command. UniSite displays the following message when the file has been loaded.

Data transfer complete

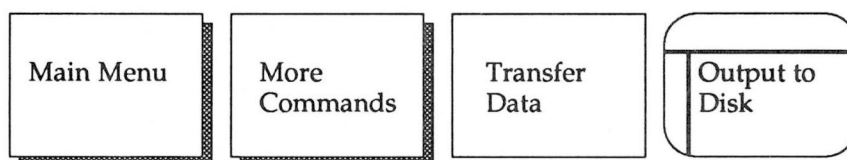
The following parameters appear on the Input from Disk screen:

- **Input Filename** — Specifies the name of the disk file from which formatted data is taken. The filename parameter must follow standard DOS conventions, and can contain a drive designator.
- **Destination (R,D)** — Specifies the destination for the data. Press  to toggle between R (RAM) and D (another disk file).
- **Filename** — Specifies the filename for the disk file into which data is sent. This option appears if you specify disk as the Destination. The filename must follow standard DOS conventions, and can contain a drive designator.
- **I/O Translation Format** — Specifies the format for the data to be input. See Chapter 7 for a complete list of supported formats.
- **I/O Address Offset** — Enter the beginning hex address, or the first address you want to capture within a file, of the disk file's data. This field appears only if a non-JEDEC format has been selected. UniSite subtracts this address from addresses received to determine where the data is loaded into memory. Entering FFFFFFFF sets the I/O Offset equal to the first address received.
- **Memory Begin Address** — Specifies the first address, in hex, to where the first byte of data is stored in memory. If the destination is RAM, it is a beginning RAM address. If the destination is disk, it is a beginning disk file address. The default address is 0. This field appears only if a non-JEDEC format has been selected.
- **User Data Size** — The User Data Size specifies how many bytes (in hex) is read during the Input from Disk operation. The default User Data Size is 0, which causes all of the data to be input. After the operation is complete, UniSite updates the User Data Size parameter to reflect the number of bytes stored to the destination. If a value less than the size of data file input is entered, the number of bytes equal to that value are actually stored. This field appears only if a non-JEDEC format has been selected.



## Output To Disk

The Output To Disk command saves data from a disk file or from RAM to another disk file. The data in the newly created disk file can be stored in any of the supported translation formats.



This command is useful if you already have a data file and want to save it in another translation format. This command is just like the Upload Data command, except that the formatted data is sent to a disk file rather than to a port.

Follow the steps below to output data in a translation format and store it in a disk file.

1. Make sure there is enough space on the disk in the drive to hold the file you are writing.

Use the View Directory command on the File Menu to check the amount of free space on the disk you are going to save the file to.

2. Specify the settings for the parameters listed below.
3. Press ☐ to start this command. UniSite displays

Data transfer complete

when the file has been output to the disk.

The following parameters appear on the Output To Disk File With Translation screen:

- **Source (R,D)** — Select the Source for the disk file data. Press ☐ to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file from which the data is taken. This option appears only if disk is selected as the Source. The filename parameter must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is `b:27256.dat`.
- **Output Filename** — Specifies the name of the disk file you want the formatted data sent to. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is `a:27256.hex`.
- **I/O Translation Format** — Specifies the translation format for the data. A complete listing of the formats is given in the Translation Format chapter of this manual.
- **I/O Address Offset** — Enter the desired beginning address of the disk file. This field appears only if a non-JEDEC format has been selected. UniSite adds this value to the address of the data in memory (relative to the Memory Begin Address of 0) and output the sum as the I/O address. Entering FFFFFFFF sets the I/O Address Offset to 0.



- **Memory Begin Address** — Specifies the first address, in hex, from where the first byte of data is retrieved to write to the disk output file. If the source is RAM, it is a beginning RAM address. If the source is Disk, it is a beginning disk file address. The default address is 0. This field appears only if a non-JEDEC format has been selected.
- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block to be output, with translation, to the output file from the source. Enter the number of bytes to output. Entering zero sets User Data Size to the total number of hex bytes in UniSite User RAM or the size of the source disk file if disk is used as source. This field appears only if a non-JEDEC format has been selected.

## Serial Output

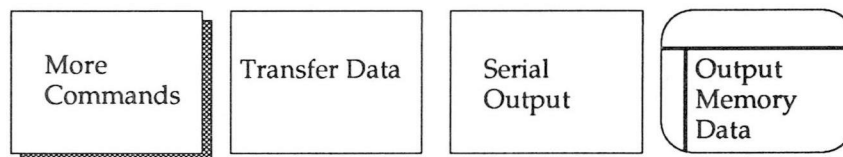
Use the Serial Output command to send data from UniSite to a serial device, such as a printer.

This command is a useful way to obtain a quick copy of programming or other device-related data. Serial Output does not do any data translating. If a logic device is selected, the fuse data is output by fuse number and the vectors is output by vector number. If a memory device is selected, the data is output by address in hex format.

Output Memory Data is explained first, followed by Output Logic Data.

## Output Memory Data to Serial Port

When a memory device has been selected, the Serial Output command is output a specified memory block to one of UniSite's serial ports.



When all parameters described below have been entered, press  to begin the transfer operation.

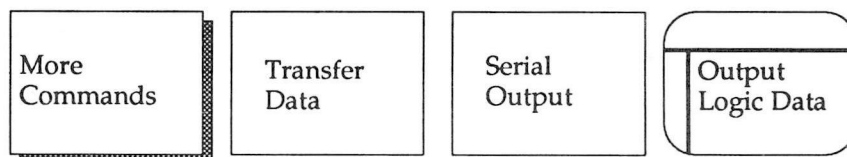
The parameters for this command are listed below.

- **Source (R,D)** — Specifies the source for the data. Press  to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the disk file to use as the Source. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is **b:27128a.dat**.
- **Destination (R,T)** — Specifies the destination for the data. Press  to toggle between R (Remote port) and T (Terminal port).
- **Number Of Lines Between Form Feeds** — Specifies the number of printed text lines you wish to have per page. The default is 0 (no form feed).

- **Memory Begin Address** — Specifies the first address, in hex, of the first byte of data to be retrieved and sent out the serial port. If the source is RAM, it is a beginning RAM address. If the source is disk, it is a beginning disk file address. The default address is 0.
- **User Data Size** — Specifies the hexadecimal size, in bytes, of the data block to be output. Enter the number of bytes to output. Entering zero sets the User Data Size to the total number of bytes in UniSite User RAM or the size of the source disk file if the disk is used as the source.

### Output Logic Data to Serial Port

If you have selected a logic device, the Output Logic Data to Serial Port screen appears.



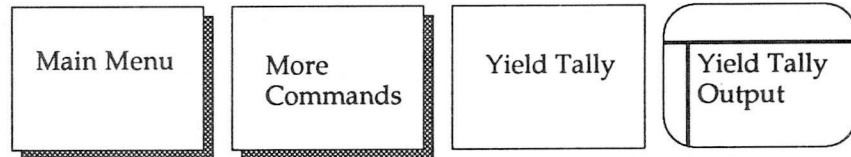
The parameters on that screen are described below:

When all parameters are entered, press  to begin the transfer.

- **Source (R,D)** — Specifies the source for the data. Press  to toggle between R (RAM) and D (Disk).
- **Filename** — Specifies the disk file to use as the data source. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is **b:1618.dat**.
- **Destination (R,T)** — Specifies the destination for the data. Press  to toggle between R (Remote port) and T (Terminal port).
- **Number Of Lines Between Form Feeds** — Specifies the number of printed text lines you wish to have per page. The default is 0 (no form feed).
- **Starting Vector Number** — Specifies the first vector to be output. The default is 1, which causes the vector listing to start at the first vector.
- **Number Of Vectors** — Specifies the total number of vectors you wish to output. The default is 0, which causes no vectors to be output.

## Yield Tally

The Yield Tally command allows you to maintain programming information on devices that have been programmed.



This information can be very useful in a manufacturing environment where device yield statistics must be kept. Yield statistics are maintained on the last 16 device types programmed. If you attempt a yield tally on a 17th device, UniSite drops the statistics for the oldest device. UniSite stores the manufacturer name and its part number or family/pinout codes as the device name in the yield tally record.

The yield data is stored on the Algorithm disk in a file called **ytally.ytl**. If the file does not exist, enabling the Yield Tally option creates a blank copy of this file on the disk.

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*Note: You may upload the yield statistics while in CRC mode by using command 43]. The CRC command 46] clears the yield tally statistics. CRC commands are described in Chapter 6, "Computer Remote Control."*

Space is allocated for the Yield Tally data files on the Algorithm disk. When the Yield Tally function is invoked without the Algorithm disk, the error message

Algorithm disk not found

is displayed on the terminal or, if you are in CRC mode, error code 9A is returned.

## Yield Total

The Yield total does not include those devices with error conditions that are not recorded in one of the four categories: illegal bit, mis-verify, device not programmable, structured test failure. Examples of these conditions are continuity check, electronic ID error, or overcurrent.

The Yield Tally screen provides statistics for the following categories:

- **Device Name** — Manufacturer's name and part number, family/pinout codes. Statistics for the last sixteen device types are kept.
- **Total Count** — The number of individual devices of the same type that UniSite attempted to program.
- **Good Part** — The number of devices successfully programmed.
- **Illegal Bit** — The number of devices that failed because they did not pass non-blank test or Illegal Bit Check.
- **Verify Fail** — The number of devices that failed because they did not verify.
- **Struct Fail** — The number of logic devices of the same type that failed the logic structured vector test.
- **Device Not Programmable** — The number of devices that could not be programmed because they contained bits that required more programming pulses than were specified.

In the non-blank test, if you stop the operation without programming the device, the illegal bit count is incremented by one. If you proceed with the programming operation, the illegal bit count remains unchanged while the yield tally records the result of the programming operation.

To erase the entire set of statistics, press **Ctrl** + **E**. Press **F2** to go to the previous menu or **F1** to return to the Main Menu. The total number of programming errors is not recorded. This value may be derived by adding the values in the individual error columns.

**Transparent Mode**

Transparent mode can be entered from all of UniSite screens with the following exceptions:

- Editor screens
- Under/over-blow screen
- Yield Tally screen
- Help screens
- CRC mode

With Transparent mode, you can communicate with a host computer connected to one of UniSite's ports. This mode causes the terminal connected to the other port on UniSite to act as if it were connected directly to the host computer. This mode is useful for establishing communication with the host (such as logging in and executing commands).

To enter and exit this mode, type **Esc** **Ctrl** + **T** from the terminal. Transparent mode does not support binary data transfers (this can be done via the upload and download commands using one of the binary data formats).

In transparent mode, all key strokes entered on the terminal is passed directly to the host with one exception. The **Esc** character is stripped out since it represents a special meaning to UniSite (it is part of the Exit Transparent Mode command). To send an **Esc** character to the host, enter two consecutive **Esc** characters (the second one is passed to the host), or if **Esc** is followed by some character other than a **Ctrl** + **T**, the escape and the character is sent to the host.

See Chapter 2 for information on configuring UniSite to operate in Transparent mode.

# 6 *Computer Remote Control*

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UniSite can be controlled via a host computer using the Computer Remote Control (CRC) protocol described in this chapter. CRC commands have been designed to be incorporated into a remote computer software program (driver) which will allow an operator to control UniSite. The driver generates commands and sends them to UniSite, which executes the commands. UniSite then returns a response character, and in some cases, data. The driver reacts to the response and uses it to generate messages and prompts for the user.

This section contains the following information:

- System Setup — Explains how to setup UniSite for remote control operation. Includes information on entering and exiting CRC mode.
- CRC Commands — Gives a complete listing of the available CRC commands. A command summary, which lists commands, descriptions, and UniSite's response precedes the complete listing of commands.
- CRC Error Codes — Lists the error codes that may be returned while UniSite is being operated in CRC mode.

## Which Driver to Use?

As mentioned earlier, you must use a driver program to send the CRC commands and receive UniSite's responses. You can either write your own software driver, using the commands described in this chapter, or use Data I/O's PROMlink.

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## System Setup

UniSite receives CRC commands and sends responses to the host computer through an RS-232C port using a 25-pin D connector in two possible configurations: either DTE or DCE. Only the Remote port supports CRC operation.

The pin designations for the Remote port are shown in the "More About Cables" section of Chapter 2. Included in that section is a table of pin definitions, which explains the function of each pin for the two serial port configurations.

To ensure correct operation of the Remote port with the host computer, set the parameters for the Remote port according to the host computer requirements.

## Entering CRC Mode

CRC mode can be entered in either of two ways: by the Remote Control menu, or automatically at power-up.

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*Note: Before you enter CRC mode with a new version of software, you must use the Update command to update the system software. Refer to the description of the Update command in the "Commands" chapter.*

### By Menu Commands

To enter CRC mode using the Remote Control menu, do the following:

1. Press **[F1]** to go to the Main Menu.
2. Type **[M]** to select the More Commands menu.
3. Press **[R]** to select Computer Remote Control from the More Commands menu.

UniSite is now in Remote Control mode. Except for **[Ctrl] + [Z]**, all keyboard input will be ignored.

**On Power-up**

UniSite enters either terminal or CRC mode during power-up based on the following combination of port connections and parameter settings.

Parameter Settings		Port Connections		
Power Up CRC	User Menu Port	Terminal Connected	Remote Connected	Result
Off	T (Terminal)	Yes	Yes	Terminal mode on Terminal port
Off	T (Terminal)	No	Yes	CRC mode on Remote port
Off	R (Remote)	X	Yes	Terminal mode on Remote port
On	X	X	Yes	CRC mode on Remote port
X	X	Yes	No	Terminal mode on Terminal port

*Note: X = don't care condition*

If you wish to have UniSite power up in CRC, perform the following steps:

1. Press **[F1]** to get to the Main Menu.
2. Type **[M]** to select the More Commands menu.
3. Press **[C]** to select the Configure System menu.
4. Press **[E]** to select Edit from the Configure Systems menu.
5. Press **[I]** to select Interface from the Edit menu. UniSite displays the interface parameters.
6. Move the cursor to the Power on CRC field and press **[Y]**. CRC is now selected. The following steps in this procedure save Power-on CRC mode as a system parameter.
7. Press **[F2]** two times to return to the Configure System Parameters menu.
8. Press **[S]** to select Save from the Configure System Parameters menu. The screen displays the Save System Parameters menu.
9. Type **[1]** **[J]** to select the Power-up Defaults file as the one where system parameters will be saved.
10. Press **[J]** again so that the selection will be saved to the disk. The next time you power up UniSite, it will enter CRC mode automatically.



**Which Interface Mode?**

You can operate UniSite in one of two interface modes: Terminal and CRC. In Terminal mode you use screens and menus to interact with UniSite. In CRC mode you send single-line commands to UniSite and UniSite responds with single line prompts, responses, and error codes.

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*Note: Terminal mode operations may be run from either the Terminal port or the Remote port. CRC mode operations must be run from the Remote port; CRC will not work on the Terminal port.*

Depending on the equipment you have connected to UniSite, and on the settings of the User Menu Port and Power On CRC parameters, you can select which mode is available on which port. (The User Menu Port parameter is found on the More Commands/Configure System/Edit/Communication Parameters screen.)

Factory defaults for UniSite are Terminal mode commands sent through the Terminal port and CRC mode commands sent through the Remote port. The factory default for power-up state is Terminal mode.

**Exiting CRC Mode**

Press **Ctrl** + **Z** . to exit CRC from an ASCII terminal on the Terminal port.

From a remote computer, send the **Z** **J** command.

If you exit remote mode using the **Z** **J** command, UniSite's parameters are set to what they were BEFORE you entered remote mode. If you exit using **Ctrl** + **Z** , UniSite's parameters are NOT changed.

**Suspending CRC Mode**

CRC Mode can be suspended temporarily to allow you to go into terminal mode to view or change parameter settings or the device data in memory. If the User Menu Port is set to T (Terminal port) press **Ctrl** + **Z** to suspend CRC Mode. If you are controlling the programmer from the Remote port, send the 49] command. See the description of the 49] command for more information.

**Halting CRC Operations**

To halt any command or any ongoing CRC operation, use one of the following commands from the Remote port. Neither of the following two commands requires a **J** . Both commands are immediate and both terminate any preceding command operation.

**ASCII**

Command	Hex Code	Description
Esc	1B	Causes UniSite to unconditionally halt any operation except a binary transfer.
BREAK	n/a	Causes UniSite to unconditionally halt any operation in progress. This includes all data communications transfers. The data line must be held in the spacing condition for 110 ms to 700 ms.

## Using PROMlink with UniSite

You may use Data I/O's PROMlink as a software driver for UniSite in CRC mode. The following subsection lists the UniSite CRC commands that are functional with PROMlink. In addition, many of UniSite's options are accessible by creating PROMlink User-Defined Functions to access them. Those functions are also listed below.

*Note: You must have version 2.3 or later of PROMlink to use it with UniSite.*

### Program/Verify/Load Options

**Data Word Width** – Steps of 8 only (use User-Defined Function to specify 4)

**(Logic) Terminal Mode** – Not available (use UniSite's terminal mode)

### Edit Functions

**Split RAM** – Not required (automatic with Set Programming)

**Shuffle RAM** – Not required (automatic with Set Programming)

**(Logic) Terminal Mode** – Not available (use UniSite's terminal mode)

### File Transfer Functions

**Binary File Transfers** – Files less than or equal to 64K only (version 2.7 does not have the restriction)

## Computer Remote Control Functions

Almost all of UniSite's CRC commands may be used by PROMlink. The following list shows those CRC commands that are not used by PROMlink's normal menu selections and that may be implemented by User-Defined Functions. (Refer to the *PROMlink User Manual* to find instructions for creating User-Defined Functions.)

### CRC RAM Commands

#### CRC Code

#### Command

–	Invert RAM
\	Move Memory Block
n28]	Fill Fuse Map

### CRC Device Status Commands

R	Return Status of Device*
nnS	View Sumcheck*
Y	Display Parity Errors
[	View Device Family / Pinout Code
43]	Upload Yield Tally

### CRC System Management Functions

G	Configuration Inquiry
Z	Exit Remote Control
01]	Display System Configuration
n41]	Upload Self Test Results
FC]	Restore Entry CRC Default Parameters
FD]	Restore User-Defined CRC Parameters
FE]	Save User-Defined CRC Parameters

\* These commands are used internally by PROMlink, but must be implemented as User-Defined Functions to view the results directly.

**CRC Program/Load/  
Verify Commands****CRC Code****Command**

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<i>n03]</i>	Electronic ID Verify
<i>n07]</i>	Next Set Member
<i>nn22]</i>	Data Word Width
<i>n23]</i>	Number of Verify Passes
<i>n26]</i>	Logic Verification Options
<i>n27]</i>	Set/Clear Enable/Disable Security Fuse
<i>n29]</i>	Reject Count Option
<i>hh2A]</i>	Enable Programming Options
bit 0 (hex 01)	Illegal-Bit Check
bit 1 (hex 02)	Blank Check
bit 2 (hex 04)	Yield Tally
bit 3 (hex 08)	Erase EE Device
bit 4 (hex 10)	Odd/Even Byte Swap
bit 5 (hex 20)	JEDEC I/O Translate DIP/LCC
bit 6 (hex 40)	Continuity Check
bit 8 (hex 80)	Special data
<i>hh2B]</i>	Disable Programming Options (Same list as Enable)
<i>hh2D]</i>	Vector Test Options
<i>nn2F]</i>	View 8-Character Sumcheck
<i>xxx. . .xxxx30]</i>	Set Data File Name
<i>n31</i>	Set Data/Source Destination
<i>xxx. . .xxxx38]</i>	Load File From Disk
<i>39]</i>	Delete All RAM Files

**CRC File Transfer  
Functions**

<i>hhM</i>	Enter Record Size
<i>nn02]</i>	Set Upload Wait Time
<i>xxx...xxxx05]</i>	Set Host Command

**Using Remote  
ON/OFF to Connect  
Multiple UniSites**

You can use two features on the Interface Parameters menu to affect the way UniSite responds to CRC commands while in CRC mode: the Remote ON code and the Remote OFF code. Use these features if you want to use ASCII characters to enable/disable the Remote port. For example, you can use Remote ON/OFF to connect multiple UniSites to a single host computer.

When the Remote ON and Remote OFF codes are set to something other than zero, UniSite ignores all data input after receiving the Remote OFF code until it receives the Remote ON code. After receiving the Remote ON code, commands and data are processed normally until another Remote OFF code is received. The Remote ON and Remote OFF codes are normally set to control characters (hex 01 - 1F) and used when transfers contain non-binary data. The data itself should never be the same as the codes used for Remote ON/OFF.

## CRC Default Settings

When CRC mode is entered, certain defaults are set prior to accepting any commands. The default settings are outlined below:

Description	Setting
Upload/download port	Remote port
Data source/destination	RAM
Security fuse data (0 or 1)	0
Program security fuse	No
Reject option (commercial or single)	Commercial
Algorithm Source	D (standard algorithms)
Logic verification option	All
Number of verify passes (0,1 or 2)	2
Fill RAM before downloading	No
Illegal bit check option	No
Blank check option	No
Enable yield tally option	No
EE bulk erase option	No
Odd/even byte swap for 16 bit option	No
JEDEC I/O translate DIP/LCC option	Yes
Continuity check option	Yes
Compare electronic signature	Yes
Host command	Blank
I/O address offset	0
I/O format	MOS technology (format 81)
Instrument control code (0,1, 2)	0
I/O timeout	30 seconds
Upload wait	0 seconds
Number of nulls	255
Serial set auto-increment mode	No
Programming mode	single device
Total set size	1
Upload EOF delimiter flag	Disabled
Download EOF delimiter flag	Disabled

If you exit remote mode using the Z command, UniSite's parameters are set to what they were BEFORE you entered remote mode. If you exit using **Ctrl** + **Z**, UniSite's parameters are NOT changed.

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## CRC Commands

CRC commands are a set of simplified commands for UniSite. The commands are designed to be received from a controlling computer. Because the commands are so simplified, they can be cryptic.

### CRC Command Summary

You send CRC commands to UniSite by typing the command and then pressing the ☐ key. When UniSite receives a CRC command, the command is executed and a response is sent back, followed by a carriage return. If the response is an F, an error occurred. If the response is a ?, UniSite did not understand the command. If the response is a >, the normal CRC prompt, the command executed properly. Some commands respond with both a value and the prompt. For example, UniSite might return 00284295> when you send the Calculate Sumcheck command. In this case, the 00284295 is the sumcheck and the > indicates that the command executed properly. The I, O and C commands perform any data transfer prior to sending the response.

Each command in the CRC command set is summarized in the following tables and then described in more detail on the pages that follow. The command tables are broken up into standard and extended CRC commands. Standard CRC commands are commonly used commands, such as load, program, and verify. Extended CRC commands are more specific device-related commands, such as Set Security Fuse, Fill Fuse Map, and Set Vector Test Options.

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*Note: While in CRC mode, UniSite recognizes only uppercase characters.*

Except where noted, the commands use the following notation conventions:

- lowercase alphabetic characters indicate arguments that must be specified
- *h* represents a hexadecimal digit.
- *n* represents a decimal digit.
- *xxx...xxx* represents a string of characters.

For example, *nn02]* indicates that you may precede the 02] command with two decimal digits.

Summary of Standard  
CRC Commands

Command	Description	Response
&	Insert Parts Mode	None
-	Invert RAM	>
/	View device error status	XXYY>
hhhhh:	Select device begin address	>
hhhhh;	Select memory block size	> ; (CRC Command)
hhhhh<	Select memory begin address	>
nn=	Select I/O timeout	>
fffppp@ or ffpp@	Select device type	>
cffA	Enter translation format	>
B	Blank check	>
C	Compare to port	>
D	Set odd parity	>
E	Set even parity	>
F	Error status inquiry	HHHHHHHH>
G	Configuration inquiry	RRDD>
H	No operation	>
I	Input from port	>
J	Set 1 stop bit	>
K	Set 2 stop bits	>
nnL	Load RAM from device	>
hhM	Enter record size	>
N	Set no parity	>
O	Output to port	>
nnP	Program device	>
nnR	Return status of device	AAAAA/BB/C>
nnS	View sumcheck	HHHH>
nnT	Illegal-bit test	>
hhU	Set nulls	>
nnV	Verify device	>
hhhhhhhW	Set I/O offset	>
X	Error code inquiry	HH...HH>
Y	Display parity errors	HHHH>
Z	Exit remote control	none
[	View device family/pinout code	FFFPPP>
\	Move memory block	>
hh^	Clear/fill RAM with data	>

Summary of Extended  
CRC Commands

Command	Description	Response
01]	Display system configuration	RRR/SSSS/AAAA/MM/ PPP/IIVV/JJVV/KKVV/QQ>
<i>nn</i> 02]	Set upload wait time	>
<i>n</i> 03]	Set device ID verify option	HHHHHHHH> or >
<i>nn</i> 04]	Set Remote port baud rate	>
<i>xxx...xxx</i> 05]	Set host command	>
<i>n</i> 06]	Select data bits	>
<i>n</i> 07]	Set next set member	>
<i>n</i> 08]	Select programming mode	>
<i>nn</i> 22]	Set data word width	>
<i>n</i> 23]	Select number of verify passes	>
<i>n</i> 24]	Select security fuse option	>
<i>n</i> 26]	Specify logic verify options	>
<i>n</i> 27]	Set/clear enable/disable security fuse	>
<i>n</i> 28]	Fill fuse map	>
<i>n</i> 29]	Set reject count option	>
<i>hhh</i> 2A] or <i>hh</i> 2A]	Enable programming options	>
<i>hhh</i> 2B] or <i>hh</i> 2B]	Disable programming options	>
<i>nhh</i> 2C]	Select memory fill option	>
<i>hh</i> 2D]	Vector test options	>
<i>nn</i> 2F]	Return 8-character sumcheck	HHHHHHHH>
<i>xxx...xxx</i> 30]	Set data file name	>
<i>n</i> 31]	Set data source/destination	>
<i>xxx...xxx</i> 33]	Select device manufacturer	>
<i>xxx...xxx</i> 34]	Select device part number	>
<i>xxx...xxx</i> 38]	Load file from disk	>
39]	Delete all RAM files	>
<i>xxx...xxx</i> 3B]	Delete disk file	>
<i>n</i> 3C]	Set data transfer port	>
<i>xxx...xxx</i> 3E]	Select Keep Current algorithm	>
40] or <i>n</i> 40]	Upload parts list	See text following
<i>n</i> 41]	Upload self-test results	AAA...AA>
43]	Upload yield tally	See text following
46]	Clear yield tally	>
49]	Suspend CRC mode	Displays terminal screen
<i>n</i> 4D]	Select Algorithm Source	>
DC]	Device check	See text following
DF]	View status of sockets	HH HH . . .HH>
EB]	Input JEDEC data from host	>
EC]	Output JEDEC data to host	>
FC]	Restore CRC entry default parameters	>
FD]	Restore user-defined CRC parameters	>
FE]	Save user-defined CRC parameters	>

## Standard CRC Commands

The Standard CRC Commands are described in this section. Note that the lowercase letters preceding the commands are arguments that must be specified according to the options listed under the corresponding command description. Except where noted, the standard CRC commands use the following notation conventions:

- lowercase letters indicate arguments that must be specified
- *h* represents a hexadecimal digit.
- *n* represents a decimal digit.
- *xxx...xxx* represents a string of characters.

For example, *nn02]* indicates that you may precede the *02]* command with two decimal digits.

**&**

**Insert Parts Mode** — (SetSite command) Puts UniSite in a wait state, allowing you time to insert the devices. UniSite will remain in this state until you push the SetSite socket lever forward to the Start position to begin a device operation. This command also clears the device statistics, but does not affect the yield tally data. The **&** command may be halted by pressing **[Esc]** or pulling SetSite's socket lever to the Open (fully back) position.

**/**

**View Device Error Status** — Returns the results of the previous device operation(s). The results are returned as a 4-character string in the form *xyyy*, where *xx* is the number of devices that did not program successfully and *yy* is the total number of devices you attempted to program.

**—**

**Invert RAM** — Inverts the data in RAM within the address range defined by the Beginning Memory Address and the Memory Block Size. If the Memory Block Size is set to 0, all of User Memory is inverted.

**hhhhhh:**

**Select Device Begin Address** — Sets the first device address to load, program, or verify. This command is also used as the destination address in a RAM to RAM block move. The Device Begin Address defaults to 0 if no address precedes the colon.

**hhhhhh;**

**Select Memory Block Size** — Sets the number of bytes to be uploaded or programmed. This command sets both the Memory Block Size and the Device Block Size. If no argument precedes the semicolon, or if the value of the argument is 0, the Memory Block Size is set to the size of User Memory and the Device Block Size is set to the size of the currently selected device.

**hhhhhh<**

**Select Memory Begin Address** — Sets the first RAM address from which or to which data will be transferred. This address is also used as the Begin RAM Address where the programming data is located. The Memory Begin Address defaults to 0 if no address precedes the **<**.



<i>nn=</i>	<b>Select I/O Timeout</b> — Specifies the number of seconds UniSite will wait during a download before it returns an I/O timeout error (CRC error code 46). Valid arguments range from 01 to 99 seconds. To disable the I/O Timeout, either specify an I/O Timeout of 00 seconds, or send a null value (i.e., just send the = command). The I/O Timeout defaults to 30 seconds.
<i>ffffpp@ or ffpp@</i>	<b>Select Device Type</b> — Selects the family/pinout code for a device operation. You can specify either 3-digit family/pinout codes, <i>ffffppp</i> , or 2-digit family/pinout codes, <i>ffpp</i> . To select a device by manufacturer and part number, see CRC commands 33] and 34].
<i>cffA</i>	<b>Enter Translation Format</b> — Selects the instrument control code <i>c</i> and the data translation format <i>ff</i> to be used for I/O data transfers through the Remote port. If 1 or 2 digits precede the <i>A</i> , the digits select the data translation format and the instrument control code defaults to 0. If 3 digits precede the <i>A</i> , the first digit designates the instrument control code and the last two digits specify the data translation format. For example, sending 191A selects instrument control code 1 and data translation format 91. The data translation formats and the instrument control codes are described in Chapter 7.
<b>B</b>	<b>Blank Check</b> — Performs a blank check on the currently socketed device.
<b>C</b>	<b>Compare to Port</b> — Compare data in UniSite's RAM with data received through the Remote port using the current data translation format. (JEDEC format cannot be used with this command: this command works only for memory formats.) The current Memory Begin Address and I/O Offset are used to calculate the RAM address where the data is located to compare against the incoming data.
<b>D</b>	<b>Set Odd Parity</b> — Sets odd parity for serial data transfers through the Remote port.
<b>E</b>	<b>Set Even Parity</b> — sets even parity for serial data transfers through the Remote port.
<b>F</b>	<b>Error Status Inquiry</b> — Returns a 32-bit number in the format HHHHHHHH, where each H is a hex character. The 32-bit word defines the accumulated errors in the error status word since the last F command. See the section titled "Error Status Word" in this chapter for more information.
<b>G</b>	<b>Configuration Inquiry</b> — Returns the configuration information in the form <i>RRDD</i> , where <i>RR</i> is the ROM version and <i>DD</i> is the disk version. For example if 13 is returned, the disk version is 1.3. Additional configuration information can be obtained by using the extended command 01].
<b>H</b>	<b>No Operation</b> — Returns the > prompt followed by a <input type="checkbox"/> and, if specified, a line feed. No operation is performed.

- I** **Input From Port** — Instructs UniSite to accept formatted data from the Remote port using the current data translation format and load that data into RAM. For memory devices, the current Memory Begin Address and I/O Offset values are used to calculate the RAM address where the input data is loaded. For logic devices, all of the fuse map and structured vectors will be received and placed in RAM at the appropriate address. You must select the JEDEC format if a logic device is selected.
- An XOFF is sent to the host computer after the I command is received. This allows UniSite time to get ready to receive data from the host computer. An XON is automatically sent to the host computer to begin the data transfer if the instrument control code is not 1. (This is done only for the CRC mode.) Even if your host system has hardware handshake or XON/XOFF, we recommend you provide a 20 millisecond delay between the time you send the I command and the first byte of data.
- If your system does not have hardware handshake or XON/XOFF capability, you must provide the delay to separate the I command from the first byte of data sent. A delay of 1/2 second to 8 seconds is suggested, depending on whether you use the Fill Memory option and the size of your User Memory.
- J** **Set 1 Stop Bit** — Sets one stop bit for serial data transfers through the Remote port.
- K** **Set 2 Stop Bits** — Sets two stop bits for serial data transfers through the Remote port.
- L or *nn*L** **Load RAM From Device** — Loads data from the currently selected device into programmer RAM. For logic devices, the entire device is loaded. For memory devices, specify the following parameters before you send this command:
- First device address copied from (Device Begin Address),
  - First RAM address copied to (Memory Begin Address), and
  - Size of the block copied (Memory Block Size).
- For a SetSite operation, send *nn*L, where *nn* is the number of devices in the set you want to load. Valid arguments for *nn* range from 01 to 08.
- hhM** **Enter Record Size** — Sets the number of data bytes per record for serial data transfers.
- N** **Set No Parity** — Disables parity checking for serial data transfers through the Remote port.
- O** **Output To Port** — Instructs UniSite to output formatted data to the Remote port using the current data translation format. For memory devices the current parameter settings for Memory Block Size, Memory Begin Address, and I/O Address Offset are used. The complete fuse map and structured vectors is output for logic devices. The data translation format must be JEDEC if a logic device is selected.

**P or *nnP***

**Program Device** — Programs a device with data in the programmer's RAM. For logic devices the entire device is programmed. For memory devices, specify the following parameters before you send the **P** command:

- First address to program from (Memory Begin Address),
- Number of bytes to program (Memory Block Size) and
- First device address to program (Device Block Size).

For a SetSite, send *nnP*, where *nn* is the number of devices in the set you want to program. Valid arguments for *nn* range from 01 to 08.

**R**

**Return Status Of Device** — Returns the attributes of the selected device. Data is output in the form *aaaaa/bb/c*. For memory devices, *aaaaa* indicates the device's word limit in hex, *bb* is the word size in decimal, and *c* = 1 (VOL) or 0 (VOH). For logic devices, *aaaaa* indicates the number of fuses and *bb* is the number of device pins.

**S or *nnS***

**View Sumcheck** — Returns the sumcheck of the RAM data as a 4-digit hex number. For memory devices, the sumcheck starts at the beginning of User RAM and continues for the word limit (device size) of the selected device. For logic devices, the sumcheck starts at the beginning of User RAM plus 8 bytes and continues for the device size divided by 8.

For a SetSite operation, send *nnS*, where *nn* specifies the device socket to sumcheck. Valid arguments for *nn* range from 01 to 08.

**T or *nnT***

**Illegal-bit Test** — tests the selected device for illegal bits. An illegal bit is defined as a programmed bit in the device that does not exist in RAM.

For a SetSite operation, send *nnT*, where *nn* specifies the number of devices in the set. Valid arguments for *nn* range from 01 to 08.

***hhU***

**Set Nulls** — Sets the number of nulls after a carriage return on output data transfer operations. This command also enables/disables sending of a line feed after every carriage return sent out (for responses too). If the argument is FF, no line feeds or nulls will be sent after each carriage return. The number of nulls defaults to zero and line feeds are enabled if no argument precedes the U.

**V or *nnV***

**Verify Device** — Verifies the data in UniSite's RAM against the data in the socketed device. For logic devices, the entire device is verified. For memory devices, the Memory Begin Address, Device Begin Address and Memory Block Size may be set prior to sending this command.

For a SetSite operation, send *nnV*, where *nn* specifies the number of devices in the set you want to verify. Valid arguments for *nn* range from 01 to 08.

**hhhhhhhW**

**Set I/O Offset** — Sets the I/O Offset Address to be used in I/O operations. If FFFFFFFF precedes the W command, the I/O Offset defaults to 0 for output operations and the first incoming address for input operations. The I/O Offset defaults to 0 if no argument precedes the W. For input operations, the address where the data is placed is calculated by taking the incoming address, subtracting the I/O Offset and adding the Memory Begin Address. For output operations, the outgoing address is calculated by taking the address where the data is located, subtracting the Memory Begin Address and adding the I/O Offset.

**X**

**Error Code Inquiry** — Returns the last 20 error codes and clears them from memory. Each error code is returned as a 2-digit hex character. See the section titled "CRC Error Codes" later in this chapter for explanations of the CRC error codes. A normal > prompt and a carriage return is returned if no errors have occurred. Normally, the X command is sent if the programmer returns the F error code, which means that the previous command failed.

**Y**

**Display Parity Errors** — Returns the number of parity errors as a 4-digit hex number and clears the parity error counter. The parity error counter is also cleared at power on, when a Y command is sent, or when a parity command (D, E, N) is sent.

**Z**

**Exit Remote Control** — Exits computer remote control and return control to UniSite's terminal interface.

**[**

**View Device Family/Pinout Code** — Returns the family/pinout code of the currently selected device. The family and pinout codes are returned in the form *fffppp* where *fff* is the 3-digit family code and *ppp* is the 3-digit pinout code.

**\**

**Move Memory Block** — Moves data from one RAM location to another. The Memory Begin Address, Device Begin Address and Memory Block Size all should be set prior to execution of this command. The Memory Begin Address is the source address. The Device Begin Address is the destination address. The Memory Block Size determines the number of bytes to move. Block size defaults to the size of user memory if the Memory Block Size is set to 0.

**hh^**

**Clear/Fill RAM With Data** — Fills every address within the range defined by the Memory Begin Address and Memory Block Size with the specified argument. The Memory Begin Address and Memory Block Size should be set prior to execution of this command. If you set the Memory Block Size to 0, all of User RAM will be filled with the data pattern, which effectively wipes out any data you had stored in RAM. If you send ^ without an argument, all of User RAM will be cleared (filled with 00) regardless of how you specified the block parameters.

## Extended CRC Commands

The Extended CRC Commands are described in this section. As with the Standard CRC Commands, the description of commands uses the following notation conventions:

- lowercase letters indicate arguments that must be specified
- *h* represents a hexadecimal digit.
- *n* represents a decimal digit.
- *xxx...xxx* represents a string of characters.

For example, *nn02]* indicates that you may precede the *02]* command with two decimal digits.

01]

**Display System Configuration** — Returns system configuration information in the form *rrr/ssss/aaaa/mm/ppp/iivv/jjvv/kkvv/qq* where

- *rrr* is the current ROM version
- *ssss* is the current System disk version
- *aaaa* is the Algorithm disk version
- *mm* is the decimal number of 64K-byte banks of RAM memory available.
- *ppp* is the decimal number of pin drivers available
- *iivv* identifies which PSM (small module) is installed. *ii* has the following values for the following modules:
  - 00 no module is installed
  - 01 Site 40
  - 02 Site 48
- *jjvv* identifies which FSM (large module) is installed. *jj* has the following values for the following modules:
  - 00 no module is installed
  - 01 ChipSite
  - 02 SetSite
  - 04 PinSite
  - 05 USM-340

- *kkvv* identifies which Base is installed. *kk* has the following values for the following Bases:

00 no Base is installed

01 PLCC/LCC Base

02 PGA Base (version 1)

03 SOIC Base (version 1)

04 PGA PSBASE-0402 Base (PGA Base version 2)

05 PPI Base

06 SOIC PSBASE-0302 Base (SOIC Base version 2)

- *qq* identifies which PPI Adapter, if any, is installed. *qq* has the following values for the following adapters:

00 no PPI Adapter is installed

The remainder of the values for *qq* can be found with the documentation shipped with the PPI Base.

**nn02]**                      **Set Upload Wait Time** — Specifies the number of seconds UniSite will wait before uploading data. Valid arguments range from 00 to 99 seconds.

**n03]**                      **Select Electronic ID** — Enables/disables the electronic ID test. Also, this command can return the Electronic ID of the selected device. The argument must one of 0, 1, or 2, were

- 0   Disables electronic ID.
- 1   Enables electronic ID.
- 2   Returns electronic ID as eight hex digits in the form hhhhhhhh. Leading zeros will be sent for those device not having an 8-digit ID (0000890D, for example). In gang/set mode, eight groups of 8 hex digits are returned (one for each socket), with each group separated by a space.

**nn04]**                      **Set Remote Port Baud Rate** — Sets the baud rate for the Remote port. Valid arguments are listed and described below:

<i>nn</i>	Baud Rate	<i>nn</i>	Baud Rate
1	50	10	1500
2	75	11	1800
3	110	12	2000
4	134.5	13	2400
5	150	14	4800
6	200	15	7200
7	300	16	9600
8	600	17	19.2K
9	1200		

**xxx...xxx05]**                      **Set Host Command** — Sets the command string to be sent to the host for upload or download of data. Valid arguments can range in length from 0 to 58 characters. If no argument precedes the 05] command, no host command will be sent. UniSite appends a carriage return to the end of the string.

**n06]**                      **Select Data Bits** — Sets the number of data bits for serial data transfers through the Remote port. Valid arguments are listed and described below:

- 8   Selects 8 data bits.
- 7   Selects 7 data bits.

**n07]**                      **Set Next Set Member** — Determines data organization when doing set programming. For example, if you are programming 4-bit devices and have set the Data Word Width to 8, setting the Next Set Member ( $n=2$ ) means that the upper 4 bits of each data byte (rather than the lower 4 bits) is used to program the device.

This command does not apply to set programming of devices with the memory block size set larger than the device block size. It only applies to the data word-width exceeding the device word-width. The maximum value for  $n$  is equal to the memory block size divided by the device size.

- n08]**      **Select Programming Mode** — Selects the programming mode. Valid arguments are listed and described below:
- 0   Selects single device mode
  - 1   Selects or gang/set mode.
- nn22]**      **Set Data Word Width** — Specifies, in bits, the width of a data word in the device being programmed. Valid arguments range from 4 to 64.
- n23]**      **Select Number of Verify Passes** — Selects the number of verify passes and the type(s) of voltage(s) used during a verify operation. Valid arguments are listed and described below:
- 0   Specifies no verify passes.
  - 1   Performs a single-pass verify with nominal Vcc.
  - 2   Performs a two-pass verify, one at the maximum allowed Vcc, and one at the minimum allowed Vcc value.
- n24]**      **Enable Security Fuse** — Enables/disables programming the security fuse(s). Valid arguments are listed and described below:
- 0   Disables programming the security fuse(s).
  - 1   Enables programming the security fuse(s).
- n26]**      **Specify Logic Verify Options** — Selects the type of logic verification to perform during a verify operation. Valid arguments are listed and described below:
- 0   Performs the fuse verify test followed by a structured vector test.
  - 1   Performs only the fuse verify test.
  - 2   Performs the structured vector test.
- 
- Note: UniSite does not support vector testing for logic devices with more than 84 pins regardless the setting of the verify option.*
- n27]**      **Set/Clear Enable/Disable Security Fuse** — Enables/disables programming of the security fuse and sets the state of the security fuse. Valid arguments are listed and described below:
- 0   Disables programming of the security fuse and sets the security fuse state to 0.
  - 1   Disables programming of the security fuse and sets the security fuse state to 1.
  - 2   Enables programming of the security fuse and sets the security fuse state to 0.
  - 3   Enables programming of the security fuse and sets the security fuse state to 1.



- n28]***                      **Fill Fuse Map** — Specifies the fuse state with which to fill the fuse map. Valid arguments are listed and described below:
- 0   Fills the fuse map in RAM with 0s.
  - 1   Fills the fuse map in RAM with 1s.
- n29]***                      **Set Reject Count Option** — Selects the maximum number of programming pulses required to program a device before UniSite rejects the device as unprogrammable. Valid arguments are listed and described below:
- 0   Selects the number of programming pulses specified by the device manufacturer.
  - 1   Selects a single programming pulse or military reject count.
- hhh2A]***                   **Enable Programming Options** — Enables one or more programming options. The argument can be a 2- or 3-digit hex number. Valid arguments are listed and described below:
- Bit 0 (hex 01) = enable illegal bit check
  - Bit 1 (hex 02) = enable blank check
  - Bit 2 (hex 04) = enable yield tally
  - Bit 3 (hex 08) = enable erase EE device
  - Bit 4 (hex 10) = enable odd/even byte swap
  - Bit 5 (hex 20) = enable JEDEC I/O translate DIP/LCC
  - Bit 6 (hex 40) = enable continuity check
  - Bit 8 (hex 100) = enable special data (optional)
- hhh2B]***                   **Disable Programming Options** — Disables one or more programming options. The argument can be a 2- or 3-digit hex number. Valid arguments are the same as listed for the 2A] command.
- nhh2C]***                   **Select Memory Fill Option** — Specifies what data User RAM will be filled with before a download begins. User RAM will be filled with a 2-digit hex number (the *hh* argument) when the *n* argument is 2. Valid arguments for *n* are listed and described below:
- 0   Memory is not changed.
  - 1   Default (unused locations are initialized to the unprogrammed state for the device type selected)
  - 2   Fill unused memory locations with the specified 2-digit hex number.

**hh2D]**

**Vector Test Options** — Enables or disables the compensated vector test, serial vector test, and high speed logic driver options. Valid arguments are listed and described below:

- Bit 0 = 0 to disable compensated vector test
- Bit 0 = 1 to enable compensated vector test
- Bit 1 = 0 to disable high speed logic driver
- Bit 1 = 1 to enable high speed logic driver
- Bit 2 = 0 to disable serial vector test
- Bit 2 = 1 to enable serial vector test

**2F] or nn2F]**

**View 8-Character Sumcheck** — Returns the 8-character hexadecimal sumcheck of the data in User RAM. Refer to the S command for more information.

**xxx...xxxx30]**

**Set Data File Name** — Sets the filename for any subsequent file operations.

**n31]**

**Set Data Source/Destination** — Sets the source/destination for a data file. Valid arguments are listed and described below:

- 0 = RAM
- 1 = Disk
- 2 = RAM file

**xxx...xxxx33]**

**Select Device Manufacturer** — Selects the device manufacturer for device operations. Valid arguments can range from 1 to 13 alphanumeric characters. Valid arguments must also match the manufacturer name exactly as it appears on the Manufacturer List screen or as it is uploaded via the 40] command. The manufacturer selected does not take effect until the 34] command is sent to select the device part number.

**xxx...xxxx34]**

**Select Device Part Number** — Selects the device part number for device operations. Valid arguments can range from 1 to 29 alphanumeric characters. Valid arguments must also match the part number as it appears on the Parts Number screen for the selected Manufacturer or as it is uploaded via the 40] command. This command selects an algorithm based on the part number sent in this command and the Manufacturer sent in the 33] command.

**xxx...xxxx38]**

**Load File From Disk** — Loads a disk file into RAM. Valid arguments range from 1 to 14 alphanumeric characters. The entire file is always loaded, and the User Data Size is updated to reflect the size of the file loaded into RAM. Drive A is the default drive. To load a file from the B drive, precede the filename with a B:. For example, B:27128.DAT38].

**39]**

**Delete All RAM Files** — Clears RAM files from memory. Use this command to keep UniSite from running out of RAM space for files. RAM files stay in memory until this command is sent to clear them.

**xxx...xxxx3B]**

**Delete Disk File** — Deletes a disk file. Valid arguments range from 1 to 14 characters and may include the \* wildcard character. Drive A is the default drive. To delete a file from the B drive, precede the filename with a B:, for example, B:27128.DAT3B].

**n3C]**

**Set Data Transfer Port** — Specifies which port (Terminal or Remote) UniSite will use for CRC data transfer operations (such as the input, output and JEDEC input/output commands). Unless specified otherwise, UniSite defaults to the Remote port for data transfer operations. This command makes it possible to transfer data to UniSite from a system other than the one currently running your CRC driver program. The driver program would be communicating with the Remote port of UniSite and could initiate a download or upload with a different computer connected to the Terminal port of UniSite. This is useful if the data files which you want to use exist on a system other than the one running your CRC driver program. CRC commands are still recognized only on the Remote port. Valid arguments are listed and described below:

- 0 Remote Port
- 1 Terminal Port

**xxx...xxx3E]**

**Select Keep Current algorithm** — The Keep Current algorithm is loaded from the specified .KCx filename. With this CRC command, Keep Current algorithms with different revision numbers may be selected for the same device.

**40]**

**Upload Parts List** — Uploads the contents of the current algorithm source file. Use the **n4D]** command to specify the algorithm source file. The data is transferred as a string of characters, in the following format:

Definition	Number of Bytes
Number of manufacturers	2
<CR><LF>	2 (hex)
Next is data for EACH device manufacturer, organized as follows:	
Device manufacturer's name	1 to 32
Colon	1
Number of devices	3
for this manufacturer	
Next, the following is repeated for each device this manufacturer supports:	
<CR><LF>	2 (hex)
Device's part number	1 to 32
Colon	1
Family code	4
Pinout code	4
Electronic ID	8
Module device support	2
When the bit is set then	
Bit 7	the device is supported on SetSite (unused)
Bit 6	
Bit 5	the device is supported on PinSite
Bit 4	the device is supported on ChipSite
Bit 3	the device is supported on USM-340
Bit 2	the device is supported on Site48
Bit 1	the device is supported on Site40
Bit 0	the device is not supported on HandlerLink
Base	2
<CR><LF> next device for <i>this</i> manufacturer . . . etc	
<CR><LF> next manufacturer . . . etc	

**n40]**

**Upload Current Part Information** — Uploads information about the currently selected device if the 40] command is preceded by a 1 (e.g., 140]). If the device has been selected by family/pinout code, the silicon signature returned is the first one encountered in the silicon signature table. The current part information is transferred as a string of characters in the format described below.

Device manufacturer's name	1 to 32
Colon	1
Device's part number	1 to 32
Colon	1
Family code	4
Pinout code	4
Electronic ID	8
Module device support	2
When the bit is set then	
Bit 7	the device is supported on SetSite
Bit 6	(unused)
Bit 5	the device is supported on PinSite
Bit 4	the device is supported on ChipSite
Bit 3	the device is supported on USM-340
Bit 2	the device is supported on Site48
Bit 1	the device is supported on Site40
Bit 0	the device is not supported on HandlerLink

Following are two examples.

1. If the device was selected with family/pinout code 93/51, sending the 140] command will return

Unknown:Unknown:009300510000070D86

2. If the Intel 27128A has been selected using manufacturer name and part number, sending the 140] command will return

Intel:27128A:009300510000898986

n41]

**Upload Self Test Results** — 041] returns the results of the previous self-test as a 30-character string in which each character represents the results of a different test. The tests and their positions in the string are described below.

Character Position	Item Tested	Character Position	Item Tested
1	Spare	16	Pin Driver board 7
2	EPROM	17	Pin Driver board 8
3	System RAM	18	Pin Driver board 9
4	User RAM	19	Pin Driver board 10
5	Serial port A	20	Pin Driver board 11
6	Serial port B	21	Pin Driver board 12
7	Disk drive A	22	Pin Driver board 13
8	Disk drive B	23	Pin Driver board 14
9	Option board	24	Pin Driver board 15
10	Pin Driver board 1	25	Pin Driver board 16
11	Pin Driver board 2	26	Pin Driver board 17
12	Pin Driver board 3	27	Waveform generator board
13	Pin Driver board 4	28	Pin Control Unit
14	Pin Driver board 5	29	PSM board
15	Pin Driver board 6	30	FSM board

Each test can produce one of four result codes, which are described below:

- Hardware not installed
- ? Untested
- F Failed self-test
- P Passed self-test

43]

**Upload Yield Tally** — Uploads the yield tally for up to sixteen different devices. The yield tally is uploaded in the following format:

Manufacturer's name or family/pinout	25 characters
Total parts attempted	5 characters
Space	1 character
Total parts passed	5 characters
Space	1 character
Total illegal bit/blank errors	5 characters
Space	1 character
Total verify errors	5 characters
Space	1 character
Total structured test errors	5 characters
Space	1 character
Total program failures	5 characters
Carriage return, line feed	2 characters

There is one line returned in the format above for every device entry in the yield tally statistics file.

**46]** **Clear Yield Tally** — Clears the yield tally statistics.

**49]** **Suspend CRC Mode** — Suspends CRC mode temporarily and returns to Terminal mode. While in Terminal mode, menu data will be sent to the port specified by the User Menu Port parameter. The values for all system parameters will still contain the values they had while in CRC mode prior to the 49] command. Any changes to the parameters will apply to CRC mode when CRC mode is resumed.

The 49] command allows you to temporarily leave CRC mode, perform some operations and then re-enter CRC mode with the system parameters unchanged. For example, the following scenario would be possible with the 49] command:

- Enter CRC mode
- Select a device manufacturer (*xxx...xxx33]* command)
- Select a device part number (*xxx...xxx34]* command)
- Change the setting of some programming parameters, such as illegal bit check, blank check, etc. (*hhh2A]* command)
- Suspend CRC mode and return to Terminal mode (49] command)
- Perform terminal functions, such as viewing a fuse pattern or editing memory
- Re-enter CRC mode (At this point, the changes to the programming parameters mentioned above would still be in place.)
- Program the device

---

*Note: The 49] command differs from the Z command (Exit CRC Mode). The Z command exits CRC and sets the system parameters to the values they had prior to entering CRC mode. Entering CRC mode after previously exiting CRC mode with the Z command will cause the system parameters to be set to CRC default values.*

**n4D]** **Select Algorithm Source** — Selects which set of algorithms to use with the *xxx...xxx33]*, *xxx...xxx34]*, *n40]*, and @ commands. Valid arguments are listed and described below:

- 0 Use the set of algorithms included on the Algorithm disk.
- 1 Use the extended set of algorithms (if any are available). Devices are selected from the ALT.EXT file.
- 2 Use the Keep Current set of algorithms (if any are available). The Keep Current algorithms are downloaded from the Keep Current BBS. See the documentation behind the Keep Current tab for more information.

The **n4D]** command allows you to switch between the algorithms that are included on the Algorithm disk and, for example, a collection of Keep Current algorithms. Consider the following scenario:

- Enter CRC mode
- Select the standard device file (**04D]** command)
- Select a device manufacturer (**xxx...xxxx33]** command)
- Select a device part number (**xxx...xxxx34]** command)
- Program the device (**P** command)
- From your PC, download an updated version of the algorithm from the Keep Current BBS. See the Keep Current documentation for more information. Transfer the Keep Current algorithm to a 3.5" disk.
- Select the Keep Current device files (**24D]** command)
- Select a device manufacturer (**xxx...xxxx33]** command)
- Select a device part number (**xxx...xxxx34]** command)
- Program the device with the Keep Current algorithm (**P** command)

The above example is a typical example of how to use the **n4D]** command to select a different algorithm source.

**DC]**

**Device Check** — Checks for the presence of a device in the socket. If the socket is empty, the **DC]** command returns an F. Error code 3B will be returned after the **X** command is sent. If a device is in the socket, further device checks are done if the device supports insertion and socketing tests. For example, the **DC]** command returns a device insertion error if the device is mis-socketed. If a device is in the socket and no continuity errors occur, the **DC]** command returns the normal **>** prompt.

**DF]**

**View Status Of Sockets** — (**SetSite** command) Returns the results of the previous device operation for all eight sockets. The results are returned in groups of eight 2-digit hex numbers, separated by a space. Each group represents data for a particular device. The first two hex characters contain data for the device in socket one, etc. The results are cleared after receiving the **&** command. Each bit contains different device status information:

Bit   Status If Set To One

- 7   Error was detected
- 6   Non-blank device error
- 5   Device testing or overcurrent error
- 4   Invalid electronic ID error
- 3   Illegal-bit error
- 2   Programming error
- 1   Verify error
- 0   Device is in the socket

- EB]**                      **Input JEDEC Data From Host** — Sets the I/O Format to 91 and waits for JEDEC-formatted data to be sent to UniSite through the Remote port. This command is valid only for logic devices. All the fuse map and structured vectors will be received and placed in RAM at the corresponding position.
- EC]**                      **Output JEDEC Data To Host** — Sets the I/O Format to 91 and sends JEDEC-formatted data from UniSite through the Remote port. This command is valid only for logic devices. The fuse and vector data in RAM must be valid for the selected logic device. The complete fuse map and structured vectors are output.
- FC]**                      **Restore CRC Entry Default Parameters** — Sets the CRC parameters to the original factory defaults.
- FD]**                      **Restore User-defined CRC Parameters** — Sets the CRC parameters to the last saved user-defined CRC parameters. The user-defined CRC parameters are the same as the CRC factory defaults if no user-defined parameters have been changed.
- FE]**                      **Save User-defined CRC Parameters** — Saves the current CRC parameters to a disk as the user-defined CRC parameters.



## Error Status Word

The F command returns an 8-character, 32-bit error status word. The following table shows the format of the error status word.

The 8-character word is broken into four 2-character groups. The first 2-character group defines receive errors, the second group defines programming errors, the third group defines I/O errors, and the last group is unused. Each 2-character group contains eight bits, with each bit representing an error or error type. For each bit, a 1 represents an error and a 0 represents no error.

	Bit No.	Value	Description
<b>Receive Errors</b>	31	8	ANY ERROR. If the word contains any errors, the most significant bit (bit 31) will be high
	30	4	Not used
	29	2	Not used
	28	1	Not used
	27	8	Not used
	26	4	Serial-overflow error (42)
	25	2	Serial-framing error (41,43)
	24	1	Not used
<b>Programming Errors</b>	23	8	Any device-related errors
	22	4	Not used
	21	2	Not used
	20	1	Not used
	19	8	Device not blank (20)
	18	4	Illegal bit (21)
	17	2	Nonverify (23, 24, 2B, 2C, A2)
	16	1	Incomplete programming (22, 2A, 30, 31)
<b>I/O Errors</b>	15	8	I/O error (46)
	14	4	Not used
	13	2	Not used
	12	1	Compare error (52)
	11	8	Sumcheck error (82)
	10	4	Record-type error (94)
	9	2	Address error (27)
	8	1	I/O Format error (84, 90)
<b>Unused</b>	7	8	Not used
	6	4	Not used
	5	2	Not used
	4	1	Not used
	3	8	Not used
	2	4	Not used
	1	2	Not used
	0	1	Not used

**Example**

What errors are indicated in this error status word: 80888000 ?

- 8 — the word contains error information
- 0 — no receive errors
- 8 — device related error
- 8 — device is not blank (error 20)
- 8 — I/O error
- 0 — no errors
- 0 — no errors
- 0 — no errors

- 
- Note:*
1. The numbers in parentheses are UniSite error codes, defined in the error codes section.
  2. An error can cause as many as 3 bits to be high: the bit which represents the error, the most significant bit of the 8-bit word in which the error bit occurs, and the bit 31.
  3. After being read, the error-status word resets to zero.

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## CRC Error Codes

Following is a list of error codes that appear while UniSite is being operated in the computer remote control mode. These error codes will be returned by UniSite to a host computer after UniSite receives the X command from the host. The host should normally send the X command after UniSite sent an F response to the host from a previous command. The list is in numerical order, according to the error code (left column).

- |   |   |
|---|---|
| 1F  | <b>Cannot erase device error</b> — Appears after UniSite was not able to erase an EEPROM. The device may be defective; try another device.  |
| 20  | <b>Non-blank device</b> — Appears after UniSite has performed a blank check on a device and has detected bits that are not in their erased or blank state, and are not illegal bits. This error is the result of either the B (Blank Check) command or a P (Program) command with the blank check option set previously by the extended command 2A (Enable Programming Option).   |
| 21  | <b>Illegal bit error</b> — Appears when UniSite has detected a device that has a bit programmed to the incorrect state. When this error code appears, try erasing the part (if possible) and then attempt to program the part again. (This error indicates a fatal condition in non-erasable devices.) If this error code continues to appear, it may be because the device is defective. Discard the part and try another device. The illegal-bit check error occurs as the result of either a T (Illegal Bit Check) command or a P (Program) command with the illegal bit option set previously by the extended command <i>hhh2A</i> ] (Enable Programming Option). |
| 22  | <b>Device programming error</b> — Appears when UniSite detected a defective memory cell in a device during the programming operation. If this error code appears, try another device.   |
| <hr/> <p><i>Note: The two following errors have the same error code. For either error to appear, you must have selected command n23] (Select Verify Option). If 1 was specified as the variable, use the first description. If 2 was specified, use the second description.</i></p> |   |
| 23  | <b>Verify data error (Vcc Nominal)</b> — Appears when UniSite has performed a Verify and has found a memory cell that was not programmed correctly. The device was verified while being operated with its normal operating voltage applied. When this error code appears, try another device.   |
| 23  | <b>Verify data error (Vcc low)</b> — Appears when UniSite has performed a Verify and has found a memory cell that was programmed incorrectly. The device was verified while being operated with its lowest operating voltage applied. When this error code appears, attempt to program the device again. If this error code reappears, try a different device.  |

- 24**      **Verify data error (Vcc high)** — Appears when UniSite has performed a Verify and has found a memory cell that was programmed incorrectly. The device was verified while being operated with its high operating voltage applied. When this error code appears, attempt to program the device again. If this error code reappears, try a different device.
- 27**      **End of user RAM exceeded** — There is not enough user RAM for the amount of data you want to load into it or program from it. You may have the device block size set too large, or the beginning RAM address too high. The operation may still be performed, but only part of the device will be programmed.
- 28**      **Fatal device-specific programming error** — Generic error code generated by the device-specific algorithm. No further commands should be attempted until the error condition is corrected.
- 29**      **Non-fatal device-specific programming error** — Generic error code generated by the device-specific algorithm. This error is non-fatal and is for information purposes only. In most cases, the operation was performed successfully.
- 2A**      **Device Insertion error** — Appears when either the device socket is not in the locked position, or the device is inserted backwards, or is not bottom-justified in the socket, or the device pins are not making good contact. Check the device's continuity in the socket and then try the operation again. If the same error code appears, try a different device.
- 
- Note: The two following errors have the same error code. For either error to appear, you must have previously selected command n23] - where n = 0, 1, or 2. If a 0 is chosen, there will be no error condition. (Select Verify Option). If 1 was specified as the variable, use the first description. If 2 was specified, use the second description.*
- 2B**      **Structured test error (Vcc Nominal)** — Appears when UniSite has performed a functional test on a logic device and has detected a failure. If you had selected 1 as the number of Verify Passes, UniSite was attempting to verify the logic device at its normal operating voltage. When this error code appears, try another device.
- 2B**      **Structured test error (Vcc low)** — Appears when UniSite has performed a functional test on a logic device at the low voltage and has detected a failure. If you had selected 2 for the number of Verification passes, one pass is performed while the lowest specified operating voltage is applied to the device, and the second pass is performed while the highest specified operating voltage is applied to the device. When this error code appears, try another device.

- 2C**                      **Structured test error (Vcc high)** — Appears when UniSite has performed a functional test of a logic device at the high voltage and detected a failure. If you had selected **2** for the number of Verification passes, one pass is performed while the lowest specified operating voltage is applied to the device, and the second pass is performed while the highest specified operating voltage is applied to the device. When this error code appears, try another device.
- 2D**                      **FSM/PSM for device not installed** — The device you selected cannot be programmed in the PSM or FSM that is presently installed. The FSM can be a ChipSite, SetSite or PinSite. If the FSM is PinSite, the correct Base should be installed. If the PPI Base is used then the correct adapter should be installed. If you select a device that is not supported by the installed PSM or FSM, no device operations can be performed. Install the correct FSM/PSM and try again.
- 2E**                      **Programming hardware hasn't passed self-test** — Occurs when a programming operation is attempted and the self-test had previously failed for critical hardware. Exit CRC and check the self-test screen.
- 2F**                      **Insufficient pin driver boards installed for the device selected.** — The device you are trying to load, program, verify, or check requires more pin driver boards than are installed in your UniSite.
- 30**                      **Device algorithm not found** — Occurs if device selection is attempted using family/pinout codes, and the codes selected correspond to an algorithm which is not supported by UniSite. This error code also occurs if a device operation is attempted before selecting a device.
- 31**                      **Device over-current fault** — Appears when you attempt to program a socketed device whose programming current is higher than the device you selected on-screen. The device may be faulty; insert another device into the socket and try the operation again.
- 3B**                      **No device present** — Appears after the DCJ command is sent and no device is in the socket.
- 40**                      **I/O initialization error** — Appears after an attempt to initialize the Remote port has failed. Check connections and attempt the operation again.
- 41**                      **Serial-framing error** — Appears when the Remote port detects a start bit, but the stop bit is positioned incorrectly. Check the baud rate and stop bit setting for the Remote port, or use hardware handshaking.
- 42**                      **Serial-overflow error** — The Remote port received characters that UniSite was unable to service. Check the baud rate and stop bit settings for the Remote port, or use hardware handshaking.
- 43**                      **Serial framing/overflow error** — This is a combination of serial-framing error 41 and overflow error 42. Check the baud rate and stop bit settings for the Remote port, or use hardware handshaking.

- 46      **I/O timeout** — Too much time passed before UniSite received a data file during a download operation. The I/O timeout period may be changed via the Select I/O Timeout Command (=).
- 52      **Data verify error** — The data from the Remote port did not match the data in RAM. Check the data and try the operation again.
- 75      **Security Fuse Violation** — Appears if you tried to load, program, or verify data from a device that has its security fuse programmed. If this error code appears, use a master device whose security fuse is still intact.
- 77      **Security fuse programming error** — Appears if UniSite cannot program the security fuse. If this error code appears, the device you are trying to program may be defective; try programming another device.
- 79      **Preload not supported by this device** — Appears when a preload vector in the programming data cannot be applied to the logic device.
- 81      **Serial-parity error** — The Remote port detected incoming data that had incorrect parity. Check the parity setting for the Remote port.
- 82      **Sumcheck error** — The sumcheck of the data received (as the result of a download) did not match the sumcheck downloaded from the host computer. The host computer sends a transmission sumcheck, and possibly a fuse map sumcheck, as a part of the data record. UniSite compares those sumchecks with the sumchecks it created on that same data. If the two sumchecks do not match, this error code will appear, indicating that some of the data transmitted by the host was not received by UniSite. Try the operation again, and if the problem continues, verify that the sumchecks generated from the host are correct. If the sumchecks are correct, consult your UniSite Service Manual or contact your nearest Data I/O Service Center.
- 84      **I/O format error** — There is a compatibility problem with the data translation format you are using. Check the format of the data. The Translation Formats chapter of this manual contains a description of all the data translation formats supported by UniSite. Or try sending a different translator format. If format 04 is selected, this error can indicate an illegal parameter error. Since this format is a word oriented format, the following parameters must be set to even values; I/O offset, memory begin address, user data size and upload record size.
- 88      **Invalid number of parameters** — Appears when a CRC command is preceded by an invalid number of parameters. Check the parameters preceding the command and re-issue the command.

- 89                    **Illegal parameter value** — Appears if an illegal parameter precedes a CRC command. Verify that the parameter is within the range specified for the command.
- 8B                    **Error restoring/saving CRC user-defined parameters or restoring CRC entry defaults.** — An error occurred while attempting to restore or save CRC user-defined parameters (commands FD or FE) or restoring CRC entry defaults (command FC). Check to make sure the disk is not write-protected and that the Algorithm disk and System disk are in the disk drives.
- 8E                    **File error** — A disk file error occurred during a command that accesses a disk file, such as Load File from Disk, Yield Tally, or Select Device. If you are loading a file from disk, the file probably does not exist, or the filename is misspelled. Check the filename. If you are doing a Yield Tally or selecting a device, the disk is probably write-protected. Remove the write-protection and try the operation again. This error code also occurs when you are performing a Save Configuration operation and the Algorithm Save area is exceeded.
- 8F                    **NON-JEDEC data present in RAM or disk file, or else a NON-logic device was selected with a JEDEC I/O translation format selected** — If you are doing a device operation or a load file from disk operation, check your JEDEC data. If you are doing an upload operation, select the logic device for the JEDEC file to be uploaded, or select a different I/O format for a memory device.
- 90                    **Illegal I/O format** — You tried to select an I/O format that is not supported by UniSite or you attempted to select a non-JEDEC format when a logic device was selected. Select a valid format. See the Translation Formats section for a list of supported formats.
- 94                    **Data record error** — The data that you attempted to transfer did not conform with the selected translation format; edit the data file so that it matches one of UniSite's supported translator formats. See the Translation Formats section for output samples of each translator.
- 97                    **Block move error** — A block move within RAM has violated the RAM boundaries. Check the memory begin address and memory block size and try the operation again.
- 98                    **End of device exceeded** — There is not enough room in the device to hold all the data you have specified. You may have the device beginning address set too high, the block size set too high, or you may need a larger device. Although the operation may still be performed, only part of the data will be programmed into the device.

- 99**      **End of file exceeded** — Appears when the memory block size and memory begin address parameters you specified in the Programming screen are too large for the data file you intend to use for programming. When this error code appears, change the memory block size and memory begin address file size parameters so they are small enough to accommodate the data file. You can perform the operation without changing anything, but only part of the device will be programmed.
- 9A**      **Algorithm disk cannot be found** — Appears if you are selecting a device and do not have the Algorithm disk installed. Insert the Algorithm disk in the drive and send the device selection command again.
- 9B**      **Incompatible system and algorithm disks** — The version number of the Algorithm disk is not compatible with the version number of the System disk. Insert the correct version of the Algorithm disk and try the operation again.
- 9C**      **Invalid command for this mode** — The command received is not valid in single device mode: it is a set/gang mode command. This error will also be returned if the set mode is not enabled or a non-gangable device is selected. Select a different command, select a different device, or select set/gang mode.
- 9D**      **I/O address beyond range of data format selected** — An I/O address exceeded the highest value allowed in the address field of the data format selected. Prior to performing an upload or output to disk operation the programmer calculates the highest I/O address that will be output based on the parameters supplied by the user and aborts the operation if the I/O address is too large for the data format selected. The formula for calculating the highest I/O address is:
- Highest I/O address = I/O addr offset + User data size - 1
- To avoid this error condition either select a different data format (one which will support the I/O addresses for the transfer operation) or decrease the value of the I/O offset address and /or the User data size to achieve I/O addresses within the range of the data format selected. The I/O addr offset parameter is considered an unsigned value. If it is set to the special default value of FFFFFFFF, it is treated as a value of 0. See the section titled "Table of Highest I/O Addresses" in Chapter 7 for more a list of the highest I/O address allowed for each translation format.
- A1**      **No Electronic ID** — The device does not contain an electronic ID. Turn off the Electronic ID option or change devices.



- A2**                      **Electronic ID verify error** — The device you tried to program did not have the correct electronic ID. Insert the correct device in the socket, or select a different device.
- AB**                      **Unable to load system file from system disk** — You tried to exit or suspend CRC and the System disk was not in drive A. Make sure the System disk is in drive A when you exit or suspend CRC.
- AC**                      **Security violation** — You tried to use a new version of system software that has not been installed yet. Exit CRC mode and perform the Update command to install the new version of software.
- AE**                      **Keep Current algorithm disk not found. Insert your Keep Current algorithm disk** — This error code is returned when the Keep Current algorithm file for the specified device is not found. Insert the disk with the Keep Current algorithm file for the specified device, and try again.
- AF**                      **Operation not allowed because the device was selected by family/pinout code** — This error code is returned when you attempt certain device operations, such as Compare Electronic ID, after having used a family/pinout code (the CRC @ command) to select a device. Use the `xxx...xxx33]`, `xxx...xxx34]`, and `n40]` commands to reselect the device using device manufacturer and device part number.
- In the future you can avoid this error by rewriting your CRC driver to use the device manufacturer and device part number to select devices.
- B1**                      **Block not allowed for bulk erase** — This error is returned when you try to bulk erase part of a device and the device does not support partial bulk erasing. If you want to bulk erase the device, you will have to erase the entire device. To bulk erase the entire device, set the Device Begin Address to 0 and the Memory Block Size to the size of the device or to 0.
- B2**                      **Partial device operation not allowed** — This error code is returned when block limits other than the defaults are used for a device that only supports the defaults. In this case, the block size must be equal to or greater than the device size.
- B4**                      **Odd Memory Begin Address or User Data Size Incompatible with Data Word Width** — This error code is returned when you try a device operation on a 16-bit (or larger) device and either the Memory Begin Address is set to an odd number or the User Data Size is not compatible with the Data Word Width selected. Frequently, this happens when a 16-bit device is used and the User Data Size (defined in bytes) is an odd byte count. Adjust your User Data Size or the Memory Begin Address.
- D1**                      **RAM file buffer exceeded** — Appears when you attempt to write data beyond the end of a previously allocated RAM file.
- D2**                      **RAM file not found** — Appears when you attempt to perform an operation with a RAM file and UniSite cannot find the RAM file.
- D3**                      **RAM file create error** — Appears when you attempt to create a RAM file but the attempt was unsuccessful. Possible explanations are: an illegal filename was used, or the filename already exists.

- D4**      **RAM file space exhausted** — Appears when you attempt to to create a RAM file but the attempt was unsuccessful. Possible explanations are: there was not enough RAM space remaining for RAM files or there was not enough directory entries left for RAM files.
- D5**      **Port Transfer Error** — Appears when you try to transfer data over a serial port which is not properly connected. If this error occurred after using the `n3C]` command to set the data port to the Terminal port, ensure that the Terminal port is properly connected.
- FE**      **Undefined error** — An error occurred that the CRC program could not categorize. Document the method in which the error occurred and call Data I/O to report the problem.
- FF**      **Operation Aborted** — This code will be returned if the SetSite operation being performed was halted prematurely. For example, if you were programming devices and pulled the SetSite socket lever up to the OPEN (stop) position.



# 7 *Translation Formats*

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Translation formats are different ways of encoding the data in a data file. A data file contains the information to be programmed into a device. The data file could contain the fuse pattern and test vectors for a logic device or the data for a memory device.

Generally, the data, such as the fuse pattern for a logic device, is created on a development platform and is then stored in a particular data translation format. When you want to transfer the data file to UniSite, you will need to set up UniSite to handle the right translation format. During download, UniSite translates the formatted data and stores it in user memory as a binary image file.

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## About this Chapter

This chapter describes all the translation formats UniSite supports. This chapter does not cover how to select an individual translation format. For information on how to select a data translation format, see Session 6 in Chapter 4.

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*Note: The information in the Session 6 tells you how to select a translation format from the keyboard. For information on how to use Computer Remote Control to select a translation format, see Chapter 6.*

Below you will find a list, in alphabetical order, of all the translation formats supported by UniSite. Following the list is a description and, in most cases, an example of each translation format, presented in order by format number.

Format	Code	Format	Code
ASCII-BNPF	01 (05*)	Fairchild Fairbug	80
ASCII-BHLF	02 (06*)	MOS Technology	81
ASCII-B10F	03 (07*)	Motorola Exorciser	82
Texas Instruments		Intel Intellec 8/MDS	83
SDSMAC (320)	04	Signetics Absolute Object	85
5-level BNPF	08 (09*)	Tektronix Hexadecimal	86
Binary (formatted)	10***	Motorola Exormax	87
DEC Binary	11	Intel MCS-86 Hex Object	88
Spectrum	12 (13*)	Hewlett-Packard 64000	
POF	14	Absolute	89
ASCII-Octal Space	30 (35**)	Texas Instruments	
ASCII-Octal Percent	31 (36**)	SDSMAC	90
ASCII-Octal		Jedec format (Full)	91
Apostrophe	32	Jedec format (Kernel)	92
ASCII-Octal SMS	37	Tektronix Hexadecimal	
ASCII-Hex Space	50 (55**)	Extended	94
ASCII-Hex Percent	51 (56**)	Motorola 32 bit (S3 record)	95
ASCII-Hex Apostrophe	52	Hewlett-Packard UNIX	
ASCII-Hex SMS	57	Format	96
ASCII-Hex Comma	53 (58**)	Intel OMF 386	97
RCA Cosmac	70	Intel OMF 286	98
		Intel Hex-32	99

\* This alternate code is used to transfer data without the STX start code and the ETX end code.

\*\* This alternate code is used to transfer data using the SOH start code instead of the usual STX.

\*\*\* If you have an unformatted binary file (a RAM image binary file) you should use the File Operations/Load File command to load the unformatted binary file.

---

## Instrument Control Codes

The instrument control code is a 1-digit number that signals or controls data transfers. Specifically, the instrument control code can be used to implement a form of remote control that provides peripherals with flow control beyond that provided by software handshaking. When using computer remote control, the instrument control code is sent immediately preceding the 2-digit format code. The three values of the instrument control code and associated functions are described below.

### 0 – Handshake Off

**Input Function:** Send X-OFF to stop the incoming transmission. Send X-ON to resume transmission.

**Output Function:** Data transmission will be halted upon receipt of an X-OFF character; transmission will resume upon receipt of an X-ON character.

### 1 – Handshake On

**Input Function:** Transmit an X-ON character when ready to receive data; transmit X-OFF if the receiver buffer is full; transmit an X-ON if the receiver buffer is empty; transmit an X-OFF after all the data is received.

**Output Function:** Transmit a PUNCH-ON character prior to data transmission. Data transmission will be halted upon receipt of an X-OFF character and will resume upon receipt of an X-ON character. A PUNCH OFF character is sent when the transmission is completed.

### 2 – X-ON/X-OFF

**Input Function:** Send X-OFF to stop the incoming transmission. Send X-ON to resume transmission.

**Output Function:** Transmit data only after receiving an X-ON character. Data transmission will be halted upon receipt of an X-OFF character; transmission will resume upon receipt of an X-ON character.

---

*Note: X-ON character is a CTRL-Q, or 11 hex.  
X-OFF character is a CTRL-S, or 13 hex.  
PUNCH-ON character is a CTRL-R, or 12 hex.  
PUNCH-OFF character is a CTRL-T, or 14 hex.*

---

## General Notes

Some information about data translation is listed below:

### Aborting a Data Transfer

To abort a data transfer at any time, type **Ctrl** + **Z** from the terminal. In CRC mode, send **Esc** or **Break**.

### Compatibility

When translating data, you may use any remote source that produces formats compatible with the descriptions listed in this section.

### Formats with Limited Address Fields

Some formats are not defined for use with address fields greater than 64K. Thus, if you transfer a block greater than 64K, the address fields that would be greater than 64K may wrap around and overwrite data transferred in previous data records. Formats 70 through 86, and 90 may exhibit this characteristic.

### Hardware Handshaking

Hardware handshaking may be used if compatible with the host interface by connecting the appropriate lines at the serial port interface.

Hardware handshake (CTS/DTR) is enabled as the default. However, if those signals aren't connected, the programmer senses this and communicates using software handshake (XON/XOFF). UniSite always uses software handshake regardless of whether hardware handshake is enabled.

### Leader/Trailer

During output of all formats except 89 (HP 64000), a 50-character leader precedes the formatted data and a 50-character trailer follows. This leader/trailer consists of null characters. If the null count parameter is set to FF hex, then the leader/trailer is skipped. To set the null count, go to the More Commands/Configure/Edit/Communication Parameters screen and set the Number of Nulls parameter. If in CRC, use the CRC U command to set the null count.

---

*Note: Formats 10, 11, and 89 do not function properly unless you select NO parity, and 8-bit data.*

## ASCII Binary Format, Codes 01, 02 and 03 (or 05, 06 and 07)

In these formats, bytes are recorded in ASCII codes with binary digits represented by Ns and Ps, Ls and Hs, or 1s and 0s, respectively. See Figure 7-1. The ASCII Binary formats do not have addresses.

Figure 7-1 shows sample data bytes coded in each of the three ASCII Binary formats. Incoming bytes are stored in RAM sequentially starting at the first RAM address. Bytes are sandwiched between B and F characters and are separated by spaces.

**Figure 7-1**  
*An Example of ASCII  
Binary Format*

```

FORMAT 01 (OR 05) ① BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF ②
BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF
BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF
BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF
BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF
BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF
BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF BPPPPPPPPF ③

FORMAT 02 (OR 06) ① BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF ②
BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF
BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF
BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF
BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF
BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF
BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF BHHHHHHHHF ③

FORMAT 03 (OR 07) ① B1111111F B1111111F B1111111F B1111111F ②
B1111111F B1111111F B1111111F B1111111F
B1111111F B1111111F B1111111F B1111111F
B1111111F B1111111F B1111111F B1111111F
B1111111F B1111111F B1111111F B1111111F
B1111111F B1111111F B1111111F B1111111F
B1111111F B1111111F B1111111F B1111111F ③

```

### LEGEND

- ① Start Code - nonprintable STX - CTRL B is the optional Start Code
- ② Characters such as spaces, carriage returns and line feeds may appear between bytes
- ③ End Code - nonprintable ETX - CTRL C

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Data can also be expressed in 4-bit words. UniSite generates the 4-bit format on upload if the data word width is 4 bits. Any other characters, such as carriage returns or line feeds, may be inserted between an F and the next B.

The start code is a nonprintable STX, which is a CTRL-B (the same as a hex 02). The end code is a nonprintable ETX, which is a CTRL-C (the same as a hex 03).



---

*Note: Data without a start or end code may be input to or output from UniSite by use of alternate data translation format codes. These are ASCII-BNPF, 05; ASCII-BHLF, 06; ASCII-B10F, 07.*

A single data byte can be aborted if UniSite receives an E character between B and F characters. Data will continue to be stored in sequential RAM addresses. Data is output in 4-byte lines with a space between bytes.

**Figure 7-2**  
*An Example of TI SDSMAC Format*



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- 0 or K - followed by a file header.
- 7 - followed by a checksum which UniSite acknowledges.
- 8 - followed by a checksum which UniSite ignores.
- 9 - followed by a load address which represents a word location.
- B - followed by 4 data characters (16-bit word).
- F - denotes the end of a data record.
- \* - followed by 2 data characters.

The record ends with a checksum field initiated by the tag character 7 or 8, a 4-character checksum, and the tag character F. The checksum is the two's complement of the sum of the 8-bit ASCII values of the characters, beginning with the first tag character and ending with the checksum tag character (7 or 8).

Data records follow the same format as the start-of-file record but do not contain a file header. The end-of-file record consists of a colon (:) only. The output translator sends a CTRL-S after the colon.

During download or input from disk operations the destination address for the data is calculated in the following manner:

$$\begin{aligned} \text{Memory address} = \\ (\text{load address} \times 2) - \text{I/O address offset} + \text{begin address} \end{aligned}$$

During upload or output to disk operations the load address sent with each data record is calculated in the following manner:

$$\text{Load address} = \text{I/O address offset} / 2$$

The Memory begin address, I/O address offset and User data size parameters represent bytes and must be even values for this format. The upload record size must also be even for this format (default is 16).

---

*Note: If the data will be programmed into a 16-bit device to be used in a TMS320 processor-based system, the odd/even byte swap switch must be enabled.*

---

## The 5-Level BNPF Format, Codes 08 or 09

Except for the start and end codes, the same character set and specifications are used for the ASCII-BNPF and 5-level BNPF formats.

Data for input to UniSite is punched on 5-hole Telex paper tapes to be read by any paper tape reader that has an adjustable tape guide. The reader reads the tape as it would an 8-level tape, recording the 5 holes that are on the tape as 5 bits of data. The 3 most significant bits are recorded as if they were holes on an 8-level tape. Tape generated from a telex machine using this format can be input directly to a serial paper tape reader interfaced to UniSite. UniSite's software converts the resulting 8-bit codes into valid data for entry in RAM.

The start code for the format is a left parenthesis, (Figs K on a telex machine), and the end code is a right parenthesis, (Figs L on a telex machine). The 5-level BNPF format does not have addresses.

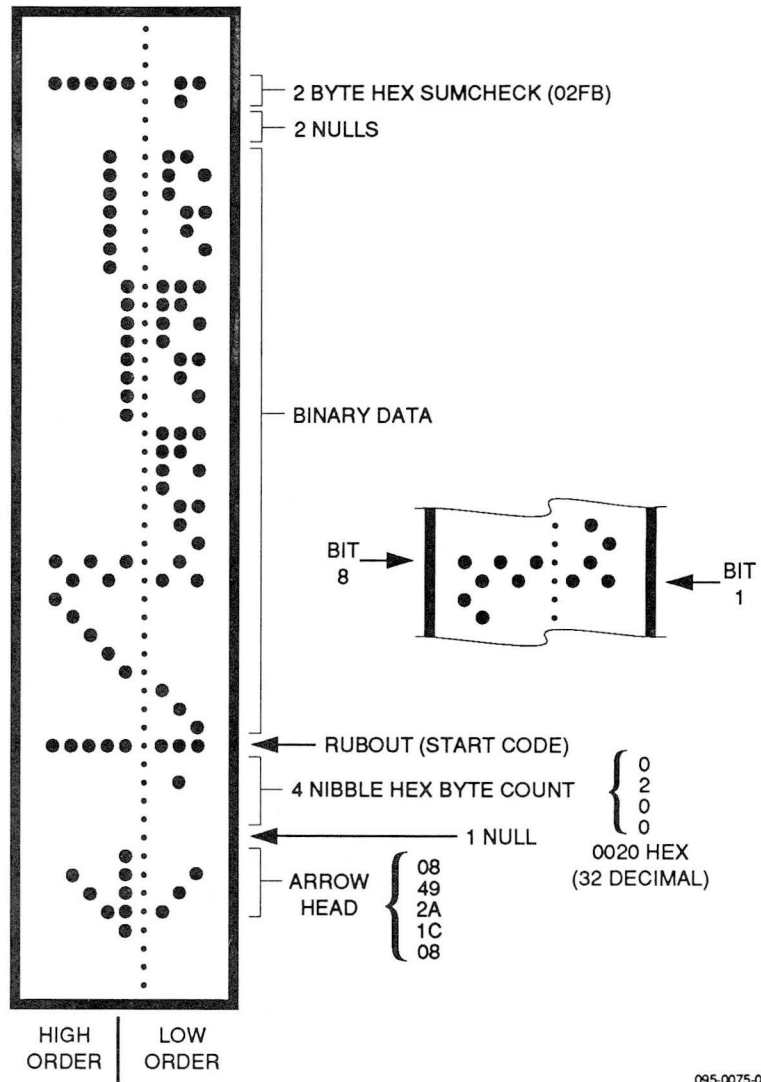
---

*Note: Data without a start or end code may be input to or output from UniSite by use of the alternate data translation format code, 09. This format accepts an abort character (10 hex) to abort the transmission.*

## Formatted Binary format, Code 10

Data transfer in the Formatted Binary format consists of a stream of 8-bit data bytes preceded by a byte count and followed by a sumcheck, as shown in Figure 7-3. The Formatted Binary format does not have addresses.

**Figure 7-3**  
*An Example of Formatted Binary Format*

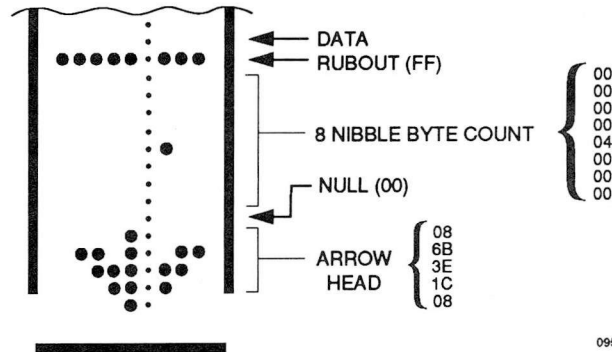


UniSite stores incoming binary data upon receipt of the start character. Data is stored in RAM starting at the first RAM address specified by the Memory Begin Address parameter and ending at the last incoming data byte.

A paper tape generated by a programmer contains a 5-byte, arrow-shaped header followed by a null and a 4-nibble byte count. The start code, an 8-bit rubout, follows the byte count. The end of data is signaled by two nulls and a 2-byte sumcheck of the data field. Refer to Figure 7-4.

If the data output has a byte count GREATER than or equal to 64K, an alternate arrow-shaped header is used. This alternate header (shown below) is followed by an 8-nibble byte count, sandwiched between a null and a rubout. The byte count shown here is 40000H (256K decimal). If the byte count is LESS than 64K, the regular arrowhead is used instead. Data that is input using Formatted Binary format will accept either version of this format.

**Figure 7-4**  
*An Example of Formatted Binary Format*



In addition, a third variation of this binary format is accepted on download. This variation does not have an arrowhead and is accepted only on input. The rubout begins the format and is immediately followed by the data. There is no byte count or sumcheck.

## DEC Binary Format, Code 11

Data transmission in the DEC Binary format is a stream of 8-bit data bytes with no control characters except the start code. The start code is one null preceded by at least one rubout. A tape output from UniSite will contain 32 rubouts in the leader. The DEC Binary format does not have addresses.

## Spectrum Format, Codes 12 or 13

In this format, bytes are recorded in ASCII codes with binary digits represented by 1s and 0s. During output, each byte is preceded by a decimal address.

Figure 7-5 shows sample data bytes coded in the Spectrum format. Bytes are sandwiched between the space and carriage return characters and are normally separated by line feeds. The start code is a nonprintable STX, CTRL-B (or hex 02), and the end code is a nonprintable ETX, CTRL-C (or hex 03).

**Figure 7-5**  
*An Example of Spectrum Format*

Optional Start Code → ○	0000	11111111	
is a nonprintable STX	0001	11111111	
	0002	11111111	
	0003	11111111	
	0004	11111111	
	0005	11111111	
	0006	11111111	
	0007	11111111	
	0008	11111111	
	0009	11111111	
	0010	11111111	
	0011	11111111	
	0012	11111111	
	0013	11111111	
	0014	11111111	
	0015	11111111	○ ← End code is a nonprintable ETX

Address Code is 4 decimal digits      4 or 8 data bits appear between the space and the carriage return

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**Note:** Data without a start or end code may be input to or output from UniSite by use of the alternate data translation format code, 13.

## POF Format (Programmer Object File), Code 14

The Programmer Object File format (POF) provides a highly compact data format to enable translation of high bit count logic devices efficiently. This format currently applies to MAX™ devices, such as the Altera 5032.

The information contained in the file is grouped into "packets." Each packet contains a "tag," identifying what sort of data the package contains plus the data itself. This system of packeting information allows for future definitions as required.

The POF file is composed of a header and a list of packets. The packets have variable lengths and structures, but the first six bytes of every packet always adhere to the following structure.

```
struct PACKET_HEAD
{
    short tag;           /*tag number - type of packet */
    long length;         /*number of bytes in rest of packet */
}
```

A POF file is read by the program examining each packet and if the tag value is recognized, then the packet is used. If a tag value is not recognized, the packet is ignored.

Any packet except the terminator packet may appear multiple times within a POF file. Packets do not need to occur in numerical tag sequence. The POF reader software is responsible for the interpretation and action taken as a result of any redundant data in the file including the detection of error conditions.

The POF format currently uses the following packet types.

---

*Note: In the following packet type descriptions, one of the terms — Used, Skipped, or Read — will appear after the tag and name.*

*Used: The information in this packet is used by UniSite.*

*Skipped: This information is not used by UniSite.*

*Read: This information is read by UniSite but has no direct application.*

<b>Creator_ID</b>	tag = 1      Used This packet contains a version ID string from the program which created the POF file.
<b>Device_Name</b>	tag = 2      Used This packet contains the ASCII name of the target device to be programmed, for example, PM9129.
<b>Comment_Text</b>	tag = 3      Read This packet contains a text string which may consist of comments related to the POF file. This text may be displayed to the operator when the file is read. The string may include multiple lines of text, separated by appropriate new line characters.



<b>Tag_Reserved</b>	tag = 4	Skipped
<b>Security_Bit</b>	tag = 5	Used This packet declares whether security mode should be enabled on the target device.
<b>Logical_Address_and_Data</b>	tag = 6	Read This packet defines a group of logical addresses in the target device and associates logical data with these addresses. The addresses comprise a linear region in the logical address space, bounded on the low end by the starting address, and extending upward by the address count specified in the packet.
<b>Electrical_Address_and_Data</b>	tag = 7	Used This packet defines a group of electrical addresses in the target device and associates data values with those addresses. The data field is ordered in column-row order, beginning with the data for the least column-row address, continuing with increasing row addresses until the first column is filled, then incrementing the column address, etc.
<b>Terminator</b>	tag = 8	Used This packet signals the end of the packet list in the POF file. This packet must be the N-th packet, where N is the packet count declared in the POF header. The CRC field is a 16-bit Cyclic Redundancy Check computed on all bytes in the file up to, but not including, the CRC value itself. If this CRC value is zero, the CRC check should be ignored.
<b>Symbol table</b>	tag = 9	Skipped
<b>Test Vectors</b>	tag = 10	Used This packet allows the POF to contain test vectors for post programming testing purposes. Each vector is a character string and uses the 20 character codes for vector bits defined in JEDEC standard 3A, section 7.0.
<b>Electrical_Address_and_Constant_data</b>	tag = 12	Skipped
<b>Number of programmable elements</b>	tag = 14	Read This packet defines the number of programmable elements in the target device.

---

## Absolute Binary format, Code 16

Absolute binary format is a literal representation of the data to be transferred and no translation of the data takes place during the transfer. There are no overhead characters added to the data, i.e. no address record, start code, end code, nulls or checksum. Every byte transferred represents the user's data. This format can be used to download unformatted data such as a .exe file to the programmer.

Since this format does not have an end-of-file character, download transfers will terminate after no more data is received and an I/O timeout occurs. This is true for all data formats which don't have an end-of-file character. For this reason do not use a value of 0 for the I/O timeout parameter on the communication parameters screen since this will disable the timeout. A value between 1 and 99 (inclusive) should be used for the I/O timeout parameter when using formats that require the timeout to occur.



## ASCII Octal and Hex Formats, Codes 30-37 and 50-58

Each of these formats has a start and end code, and similar address and checksum specifications. Figure 7-6 illustrates 4 data bytes coded in each of the 9 ASCII Octal and Hexadecimal formats. Data in these formats is organized into sequential bytes separated by the execute character (space, percent, apostrophe, or comma). Characters immediately preceding the execute character are interpreted as data. ASCII Octal and Hex formats can express 8-bit data, by 3 octal, or 2 hexadecimal characters. Line feeds, carriage returns and other characters may be included in the data stream as long as a data byte directly precedes each execute character.

**Figure 7-6**  
*An Example of ASCII  
Octal and Hex Formats*

		Optional Octal Address Field (Typical)		Octal Data Byte (Typical)	
FORMAT 30 (OR 35)	①	\$A000000,		377 377 377 377 377 377 377 377 377 377 377 377	④
		\$S007760,		Execute Character	
		Optional Octal Sumcheck Field (Typical)			
FORMAT 31 (OR 36)	①	\$A000000,		377%377%377%377%377%377%377%377%377%377%377%377%377%377%	④
		\$S007760,			
FORMAT 32	①	\$A000000,		377'377'377'377'377'377'377'377'377'377'377'377'377'377'	④
		\$S007760,			
FORMAT 37	②	\$A000000,		377'377'377'377'377'377'377'377'377'377'377'377'377'377'	③
		\$S007760,			
		Optional Hex Address Field			
FORMAT 50 (OR 55)	①	\$A0000,		FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	④
		\$S0FF0,			
		Optional Hex Sumcheck Field			
FORMAT 51 (OR 56)	①	\$A0000,		FF%FF%FF%FF%FF%FF%FF%FF%FF%FF%FF%FF%FF%FF%FF%	④
		\$S0FF0,			
FORMAT 52	①	\$A0000,		FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'	④
		\$S0FF0,			
FORMAT 53 (OR 58)	①	\$A0000,		FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,	④
		\$S0FF0,			
FORMAT 57	②	\$A0000,		FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'FF'	③
		\$S0FF0,			

### LEGEND

- ① Start Code is nonprintable STX - CTRL B (optionally SOH - CTRL A)
- ② Start Code is nonprintable SOM - CTRL R
- ③ End Code is nonprintable EOM - CTRL T
- ④ End Code is nonprintable ETX - CTRL C

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Although each data byte has an address, most are implied. Data bytes are addressed sequentially unless an explicit address is included in the data stream. This address is preceded by a \$ and an A, must contain 2 to 8 hex or 3 to 11 octal characters, and must be followed by a comma, except for the ASCII-Hex (Comma) format, which uses a period. UniSite skips to the new address to store the next data byte; succeeding bytes are again stored sequentially.

Each format has an end code, which terminates input operations. However, if a new start code follows within 16 characters of an end code, input will continue uninterrupted. If no characters come within 2 seconds, input operation is terminated.

After receiving the final end code following an input operation, UniSite calculates a sumcheck of all incoming data. Optionally, a sumcheck can also be entered in the input data stream. UniSite compares this sumcheck with its own calculated sumcheck. If they match, UniSite will display the sumcheck; if not, a sumcheck error will be displayed.

---

*Note: The sumcheck field consists of either 2-4 hex or 3-6 octal characters, sandwiched between the \$ and comma characters. The sumcheck immediately follows an end code. The sumcheck is optional in the input mode but is always included in the output mode. The most significant digit of the sumcheck may be 0 or 1 when expressing 16 bits as 6 octal characters.*

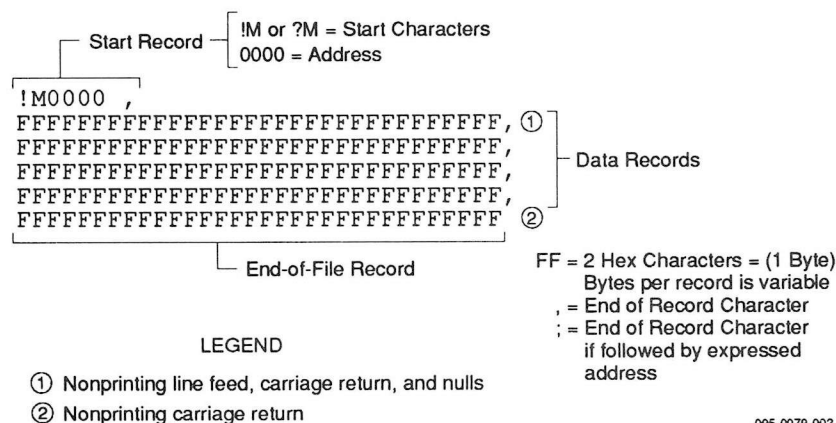
UniSite divides the output data into 8-line blocks. Data transmission is begun with the start code, a nonprintable STX character, or optionally, SOH.\* Data blocks follow, each one prefaced by an address for the first data byte in the block. The end of transmission is signaled by the end code, a nonprintable ETX character. Directly following the end code is a sumcheck of the transferred data.

\* ASCII-Octal SMS and ASCII-Hex SMS use SOM (CTRL-R) as a start code and EOM (CTRL-T) as an end code.

## RCA Cosmac Format, Code 70

Data in this format begins with a start record consisting of the start character (!M or ?M), an address field, and a space. See Figure 7-7.

**Figure 7-7**  
An Example of RCA Cosmac Format



095-0079-002

The start character ?M is sent to UniSite by a development system, followed by the starting address, and a data stream which conforms to the data input format described in the ASCII-Hex and Octal figure. Transmission stops when the specified number of bytes has been transmitted.

Address specification is required for only the first data byte in the transfer. An address must have 1 to 4 hex characters and must be followed by a space. UniSite records the next hexadecimal character after the space as the start of the first data byte. (A carriage return must follow the space if the start code ?M is used.) Succeeding bytes are recorded sequentially.

Each data record is followed by a comma if the next record is not preceded by an address, or by a semicolon if it starts with an address. Records consist of data bytes expressed as 2 hexadecimal characters and followed by either a comma or semicolon, and a carriage return. Any characters received between a comma or semicolon and a carriage return will be ignored by UniSite.

The carriage return character is significant to this format because it can signal either the continuation or the end of data flow; if the carriage return is preceded by a comma or semicolon, more data must follow; the absence of a comma or semicolon before the carriage return indicates the end of transmission.

Output data records are followed by either a comma or a semicolon and a carriage return. The start-of-file records are expressed exactly as for input.

## Fairchild Fairbug, Code 80

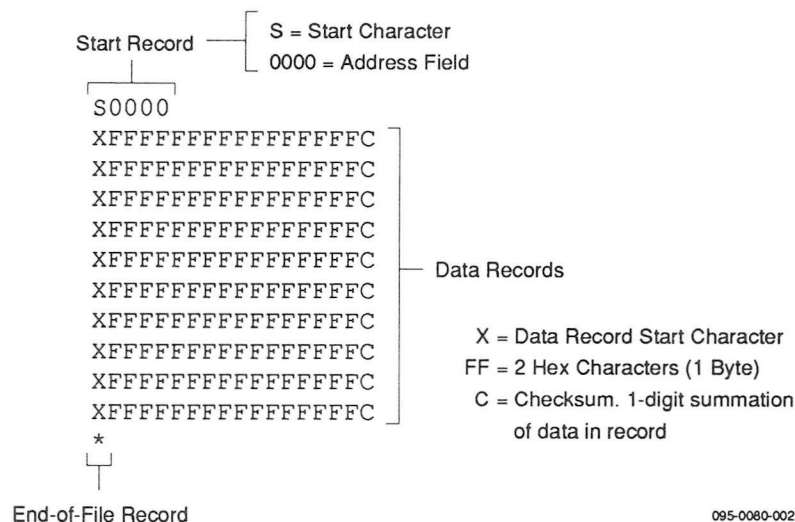
In the Fairbug format, input and output requirements are identical; both have 8-byte records and identical control characters. Figure 7-8 shows a Fairbug data file. A file begins with a 5-character prefix and ends with a 1-character suffix. The start-of-file character is an S, followed by the address of the first data byte. Each data byte is represented by 2 hexadecimal characters. UniSite will ignore all characters received prior to the first S.

*Note: Address specification is optional in this format; a record with no address directly follows the previous record.*

Each data record begins with an X, and always contains 8 data bytes. A 1-digit hexadecimal checksum follows the data in each data record. The checksum represents, in hexadecimal notation, the sum of the binary equivalents of the 16 digits in the record; the half carry from the fourth bit is ignored.

UniSite ignores any character (except for address characters and the asterisk character, which terminates the data transfer) between a checksum and the start character of the next data record. This space can be used for comments.

**Figure 7-8**  
*An Example of Fairchild Fairbug*



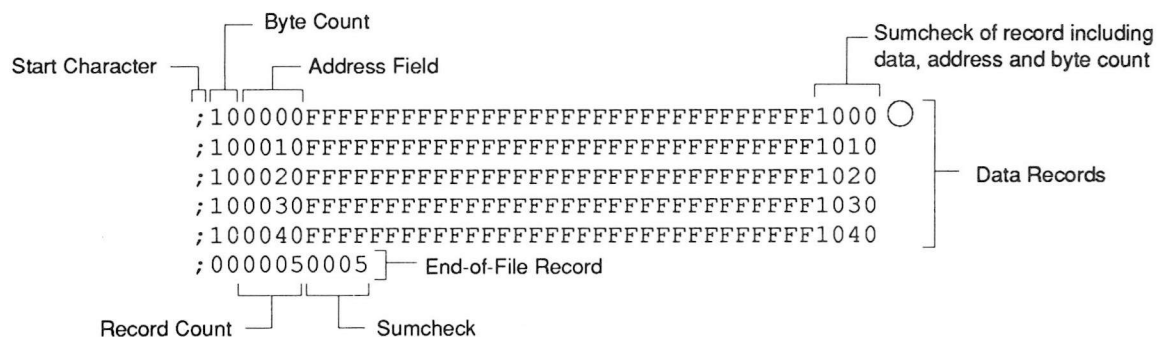
The last record consists of an asterisk only, which indicates the end of file.

## MOS Technology Format, Code 81

The data in each record is sandwiched between a 7-character prefix and a 4-character suffix. The number of data bytes in each record must be indicated by the byte count in the prefix. The input file can be divided into records of various lengths.

Figure 7-9 shows a series of valid data records. Each data record begins with a semicolon. UniSite will ignore all characters received prior to the first semicolon. All other characters in a valid record must be valid hexadecimal digits (0-9 and A-F). A 2-digit byte count follows the start character. The byte count, expressed in hexadecimal digits, must equal the number of data bytes in the record. The byte count is greater than zero in the data records, and equals zero (00) in the end-of-file record. The next 4 digits make up the address of the first data byte in the record. Data bytes follow, each represented by 2 hexadecimal digits. The end-of-file record consists of the semicolon start character, followed by a 00 byte count, the record count and a checksum.

**Figure 7-9**  
*An Example of MOS  
Technology Format*



### LEGEND

- Nonprinting Carriage Return, line feed,  
and nulls determined by null count

095-0081-002

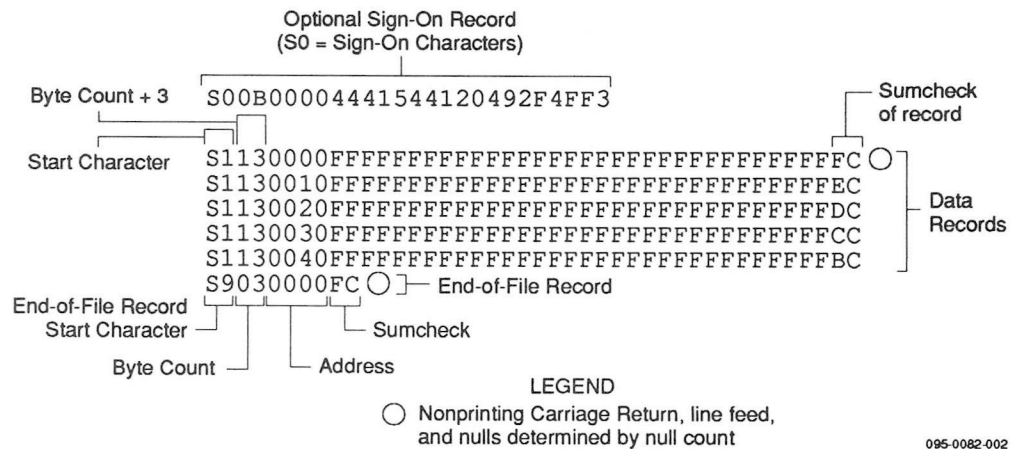
The checksum, which follows each data record, is a 2-byte binary summation of the preceding bytes in the record (including the address and byte count), in hexadecimal notation.



## Motorola EXORciser Format, Code 82

Motorola EXORciser data files may begin with an optional sign-on record, which is initiated by the start characters S0. Valid data records start with an 8-character prefix and end with a 2-character suffix. Figure 7-10 shows a series of valid Motorola data records.

**Figure 7-10**  
An Example of Motorola  
EXORciser Format



095-0082-002

Each data record begins with the start characters S1. The third and fourth characters represent the byte count, which expresses the number of data, address and checksum bytes in the record. The address of the first data byte in the record is expressed by the last 4 characters of the prefix. Data bytes follow, each represented by 2 hexadecimal characters. The number of data bytes occurring must be three less than the byte count. The suffix is a 2-character checksum, which equals the one's complement of the binary summation of the byte count, address and data bytes.

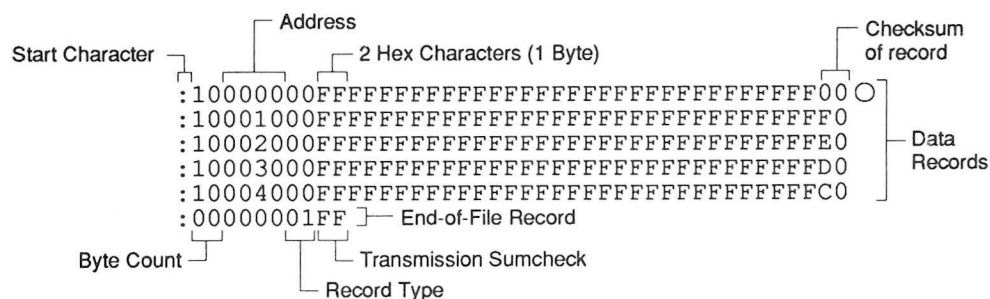
The end-of-file record consists of the start characters S9, the byte count, the address (in hex) and a checksum. The maximum record length is 250 data bytes.

## Intel Intellec 8/MDS Format, Code 83

Intel data records begin with a 9-character prefix and end with a 2-character suffix. The byte count must equal the number of data bytes in the record.

Figure 7-11 simulates a series of valid data records. Each record begins with a colon, which is followed by a 2-character byte count. The 4 digits following the byte count give the address of the first data byte. Each data byte is represented by 2 hexadecimal digits; the number of data bytes in each record must equal the byte count. Following the data bytes of each record is the checksum, the two's complement (in binary) of the preceding bytes (including the byte count, address, record type and data bytes), expressed in hex.

**Figure 7-11**  
An Example of Intel  
Intellec 8/MDS Format



### LEGEND

- Nonprinting Carriage Return, line feed, and nulls determined by null count

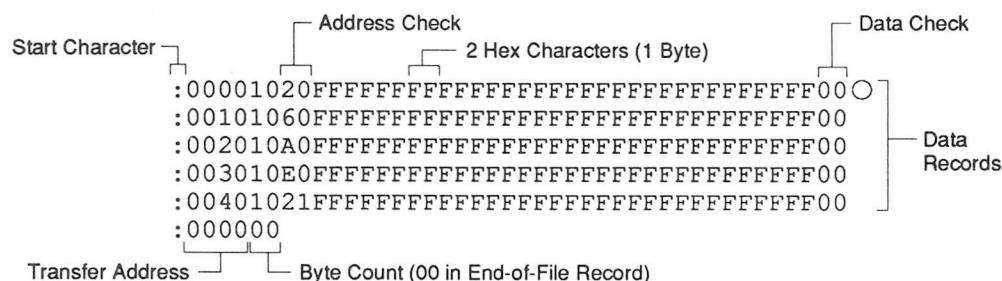
095-0083-003

The end-of-file record consists of the colon start character, the byte count (equal to 00), the address, the record type (equal to 01) and the checksum of the record.

## Signetics Absolute Object Format, Code 85

Figure 7-12 shows the specifications of Signetics format files. The data in each record is sandwiched between a 9-character prefix and a 2-character suffix.

**Figure 7-12**  
An Example of Signetics  
Absolute Object Format



### LEGEND

- Nonprinting Carriage Return, line feeds, and nulls determined by null count

095-0084-002

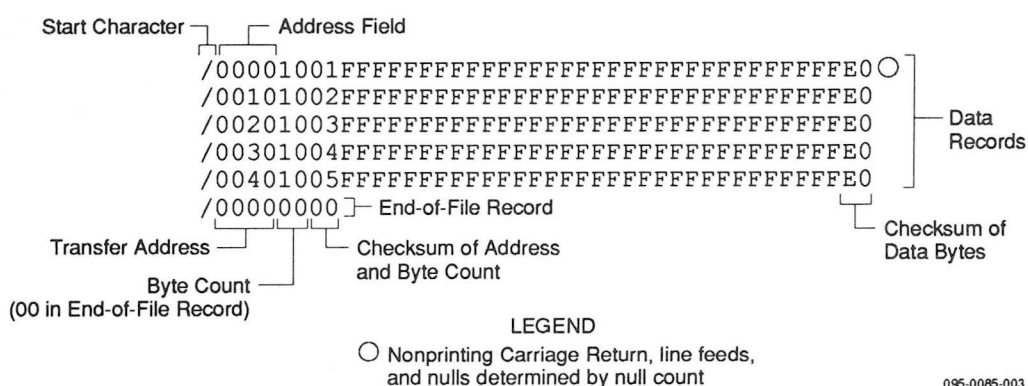
The start character is a colon. This is followed by the address, the byte count, and a 2-digit address check. The address check is calculated by exclusive ORing every byte with the previous one, then rotating left one bit. Data is represented by pairs of hexadecimal characters. The byte count must equal the number of data bytes in the record. The suffix is a 2-character data check, calculated using the same operations described for the address check.

The end-of-file record consists of the colon start character, the address and the byte count (equal to 00).

## Tektronix Hexadecimal Format, Code 86

Figure 7-13 illustrates a valid Tektronix data file. The data in each record is sandwiched between the start character (a slash) and a 2-character checksum. Following the start character, the next 4 characters of the prefix express the address of the first data byte. The address is followed by a byte count, which represents the number of data bytes in the record, and by a checksum of the address and byte count. Data bytes follow, represented by pairs of hexadecimal characters. Succeeding the data bytes is their checksum, an 8-bit sum, modulo 256, of the 4-bit hexadecimal values of the digits making up the data bytes. All records are followed by a carriage return.

**Figure 7-13**  
*An Example of Tektronix  
Hex Format*



Data is output from UniSite starting at the first RAM address and continuing until the number of bytes in the specified block has been transmitted. UniSite divides output data into records prefaced by a start character and an address field for the first byte in the record.

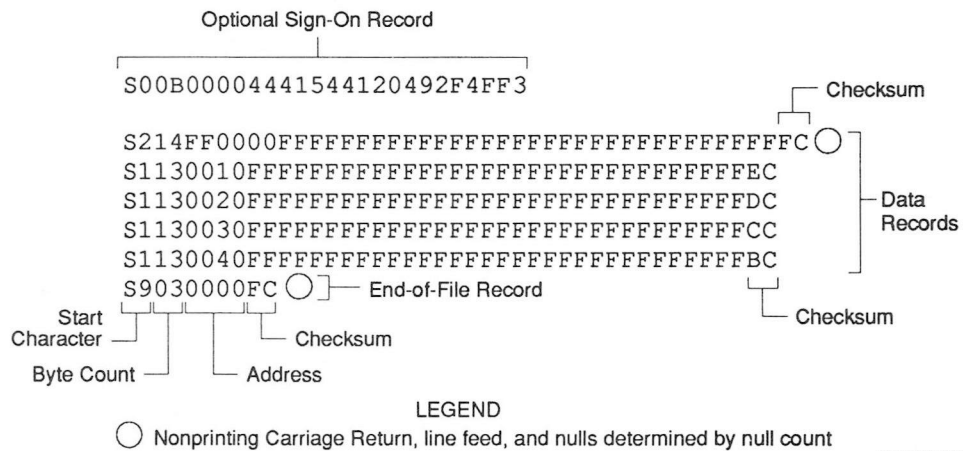
The end-of-file record consists of a start character (slash), followed by the transfer address, the byte count (equal to 00), and the checksum of the transfer address and byte count.

An optional abort record contains 2 start characters (slashes), followed by an arbitrary string of ASCII characters. Any characters between a carriage return and a / are ignored.

## Motorola EXORmacs Format, Code 87

Motorola data files may begin with an optional sign-on record, initiated by the start characters S0. Data records start with an 8- or 10-character prefix and end with a 2-character suffix. Figure 7-14 shows a series of Motorola EXORmacs data records.

**Figure 7-14**  
An Example of Motorola  
EXORmacs Format



095-0086-003

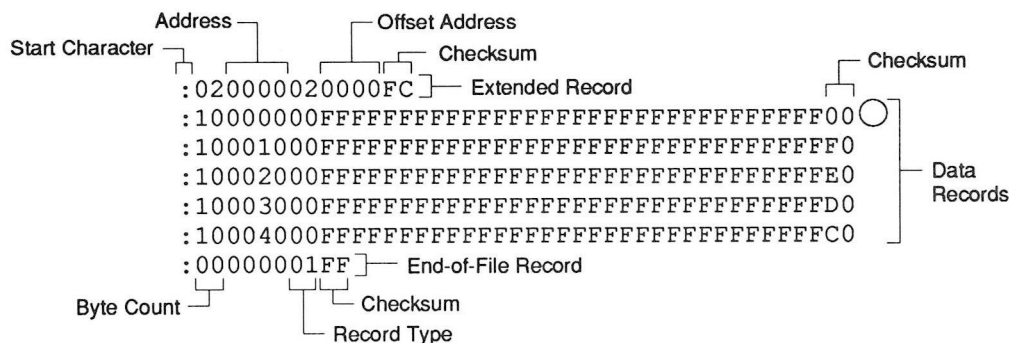
Each data record begins with the start characters S1 or S2; S1 if the following address field has 4 characters, S2 if it has 6 characters. The third and fourth characters represent the byte count, which expresses the number of data, address and checksum bytes in the record. The address of the first data byte in the record is expressed by the last 4 characters of the prefix (6 characters for addresses above hexadecimal FFFF). Data bytes follow, each represented by 2 hexadecimal characters. The number of data bytes occurring must be 3 or 4 less than the byte count. The suffix is a 2-character checksum, the one's complement (in binary) of the preceding bytes in the record, including the byte count, address and data bytes.

The end-of-file record begins with an S9 start character. Following the start characters are the byte count, the address and a checksum. The maximum record length is 250 data bytes.

## Intel MCS-86 Hexadecimal Object, Code 88

The Intel 16-bit Hexadecimal Object file record format has a 9-character (4-field) prefix that defines the start of record, byte count, load address, and record type and a 2-character checksum suffix. Figure 7-15 shows a sample record of this format.

**Figure 7-15**  
*An Example of Intel  
MCS-86 Hex Object*



### LEGEND

○ Nonprinting Carriage Return, line feed, and nulls determined by null count

095-0087-004

The four record types are described below.

#### 00 –Data Record

This begins with the colon start character, which is followed by the byte count (in hex notation), the address of the first data byte, and the record type (equal to 00). Following these are the data bytes. The checksum follows the data bytes and is the two's complement (in binary) of the preceding bytes in the record, including the byte count, address, record type and data bytes.

#### 01 –End Record

This end-of-file record also begins with the colon start character. This is followed by the byte count (equal to 00), the address (equal to 0000), the record type (equal to 01) and the checksum, FF.

#### 02 –Extended Segment Address Record

This is added to the offset to determine the absolute destination address. The address field for this record must contain ASCII zeros (Hex 30s). This record type defines bits 4 to 19 of the segment base address; it can appear randomly anywhere within the object file and affects the absolute memory address of subsequent data records in the file. The following example illustrates how the extended segment address is used to determine a byte address.

**Problem:**

Find the address for the first data byte for the following file.

```
: 02 0000 02 1230 BA
: 10 0045 00 55AA FF . . . . .BC
```

**Solution:**

- Step 1. Find the record address for the byte. The first data byte is 55.  
Its record address is 0045 from above.
- Step 2. Find the offset address. The offset address is 1230 from above.
- Step 3. Shift the offset address one place left, then add it to the record address, like this:

	1230	Offset address (upper 16 bits)
+	0045	Record address (lower 16 bits)
	<hr/> 12345	20-bit address

The address for the first data byte is 12345.

---

*Note: Always specify the address offset when using this format, even when the offset is zero.*

During output translation, the firmware will force the record size to 16 (decimal) if the record size is specified greater than 16. There is no such limitation for record sizes specified less than 16.

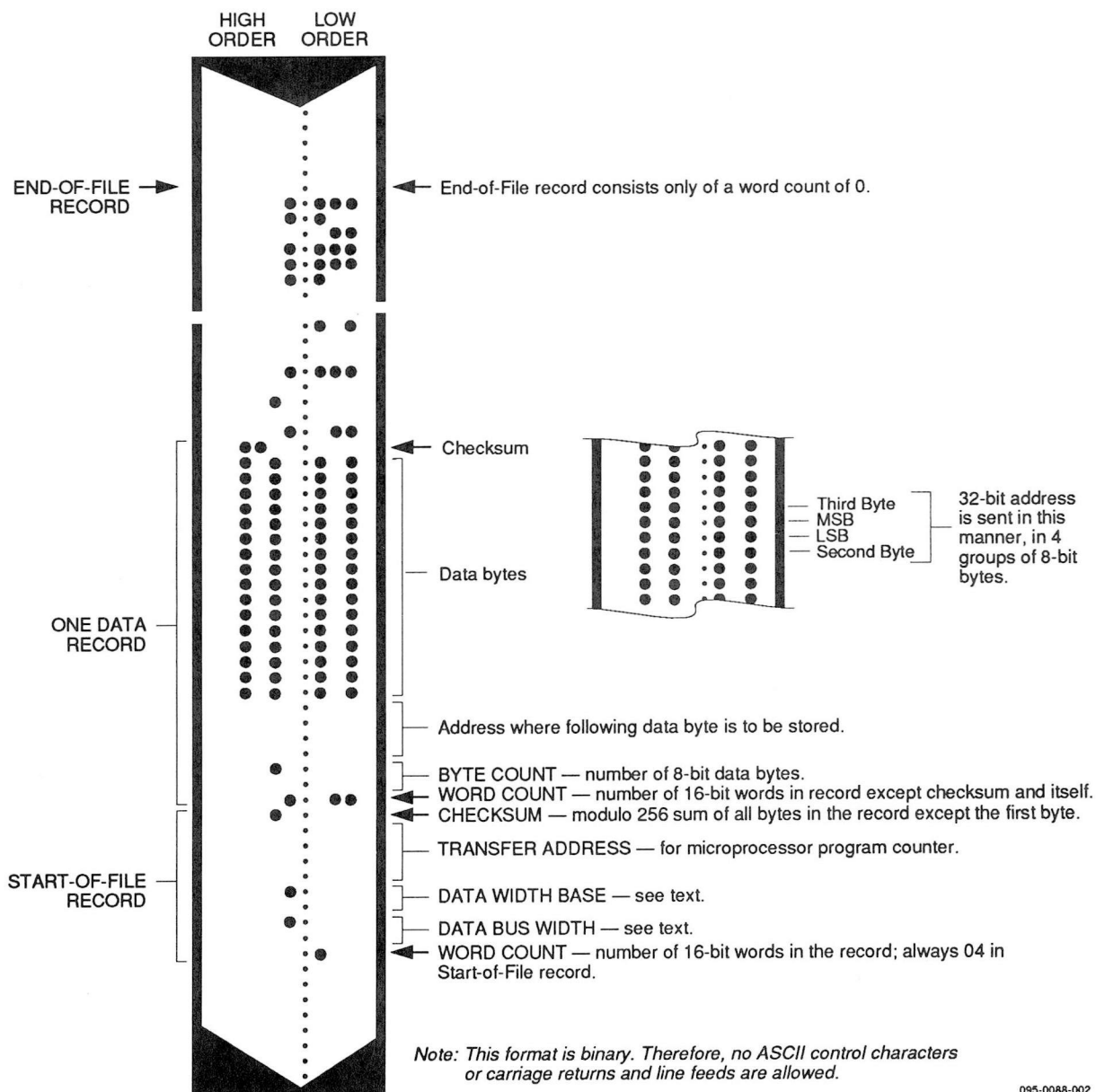
**03 –Start Record**

This record type is not sent during output by Data I/O translator firmware.

## Hewlett-Packard 64000 Absolute Format, Code 89

Hewlett-Packard Absolute is a binary format with control and data-checking characters. See Figure 7-16.

**Figure 7-16**  
An Example of HP 64000  
Absolute Format



095-0088-002



Data files begin with a Start-of-file record, which includes the Data Bus Width, Data Width Base, Transfer Address, and a checksum of the bytes in the record.

The Data Bus Width represents the width of the target system's bus (in bits). The Data Width Base represents the smallest addressable entity used by the target microprocessor.

The Data Bus Width and Data Width Base are not used by UniSite during download. During upload, the Data Bus Width will be set to the current Data Word Width, and the Data Width Base will be set to 8. The Transfer Address is not used by UniSite.

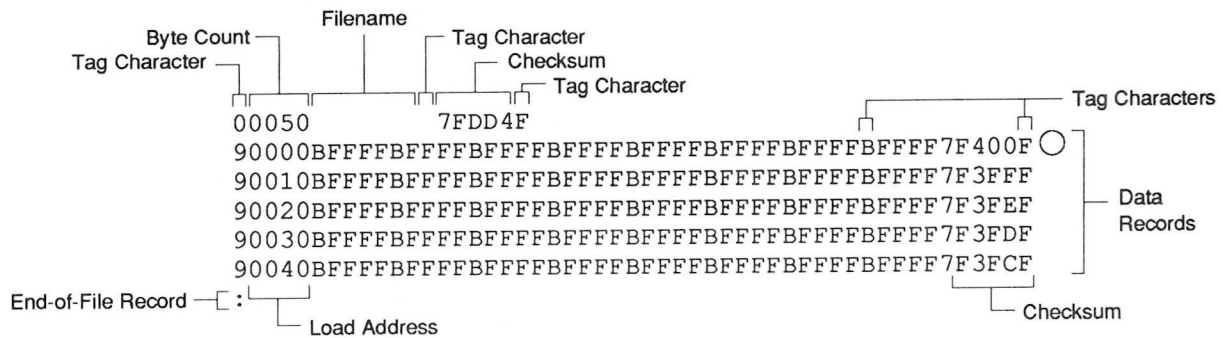
Data records follow the Start-of-file record. Each begins with 2 byte counts: the first expresses the number of 16-bit words in the record not including the checksum and itself; the second expresses the number of 8-bit data bytes in the record. Next comes a 32-bit address, which specifies the storage location of the following data byte. Data bytes follow; after the last data byte is a checksum of every byte in the record except the first byte, which is the word count.

The End-of-file record consists of a one byte word count, which is always zero. Leader and trailer nulls, normally 50 each, are suppressed in this translation format.

## Texas Instruments SDSMAC Format, Code 90

Data files in the SDSMAC format consist of a start-of-file record, data records, and an end-of-file record. See Figure 7-17.

**Figure 7-17**  
An Example of the  
TI SDSMAC Format



### LEGEND

- Nonprinting Carriage Return, with optional line feed and nulls determined by null count.

095-0089-004

Each record is composed of a series of small fields, each initiated by a tag character. UniSite recognizes and acknowledges the following tag characters:

- 0 or K - followed by a file header.
- 7 - followed by a checksum which UniSite acknowledges.
- 8 - followed by a checksum which UniSite ignores.
- 9 - followed by a load address.
- B - followed by 4 data characters.
- F - denotes the end of a data record.
- \* - followed by 2 data characters.

The start-of-file record begins with a tag character and a 12-character file header. The first four characters are the byte count of the data bytes; the remaining file header characters are the name of the file and may be any ASCII characters (in hex notation). Next come interspersed address fields and data fields (each with tag characters). If any data fields appear before the first address field in the file, the first of those data fields is assigned to address 0000. Address fields may be expressed for any data byte, but none are required.

The record ends with a checksum field initiated by the tag character 7 or 8, a 4-character checksum, and the tag character F. The checksum is the two's complement of the sum of the 8-bit ASCII values of the characters, beginning with the first tag character and ending with the checksum tag character (7 or 8).

Data records follow the same format as the start-of-file record but do not contain a file header. The end-of-file record consists of a colon (:) only. The output translator sends a CTRL-S after the colon.

---

## JEDEC Format, Codes 91 and 92

### Introduction

The JEDEC (Joint Electron Device Engineering Council) format is used to transfer fuse and test vector data between UniSite and a host computer. Code 91 is full format, and includes all the data fields (such as note and test fields) described on the following pages. Code 92 is the Kernel, or shorter format. The JEDEC Kernel format includes only the minimum information needed for the programming; it does not, for example, include information fields or test vector fields. Prior to transferring a JEDEC file, the appropriate Logic device must be selected.

JEDEC's legal character set consists of all the printable ASCII characters, and four control characters. The four allowable control characters are STX, ETX CR (RETURN) and LF (line feed). Other control characters, such as ESC or BREAK, should not be used.

---

*Note: This is Data I/O Corporation's implementation of JEDEC Standard 3A. For a copy of the strict standard, write:*

*Electronic Industries Association  
Engineering Department  
2001 Eye Street NW  
Washington, D.C. 20006*

### BNF Rules and Standard Definitions

The Backus-Naur Form (BNF) is used in the description here to define the syntax of the JEDEC format. BNF is a shorthand notation that follows these rules:

:: = denotes "is defined as."

Characters enclosed by single quotes are literals (required).

Angle brackets enclose identifiers.

Square brackets enclose optional items.

Braces { } enclose a repeated item. The item may appear zero or more times.

Vertical bars indicate a choice between items.

Repeat counts are given by a :n suffix. For example, a 6-digit number would be defined as

<number> :: = <digit>:6

For example, in words, the definition of a person's name reads:

The full name consists of an optional title followed by a first name, a middle name, and a last name. The person may not have a middle name or may have several middle names. The titles consist of: Mr., Mrs., Ms., Miss, and Dr.

The BNF definition for a person's name is:

`<full name> :: = [<title>] <f. name> {<m.name>} <l. name>`

`<title> :: = 'Mr.' | 'Mrs.' | 'Ms.' | 'Miss' | 'Dr.'`

The following standard definitions are used throughout the rest of this document:

`<digit> :: = '0' | '1' | '2' | '3' | '4' | '5' | '6' | '7' | '8' | '9'`

`<hex-digit> :: = <digit> | 'A' | 'B' | 'C' | 'D' | 'E' | 'F'`

`<binary-digit> :: = '0' | '1'`

`<number> :: = <digit> {<digit>}`

`<del> :: = <space> | <carriage return>`

`<delimiter> :: = <del> {<del>}`

`<printable character> :: = <ASCII 20 hex ... 7E hex>`

`<control character> :: = <ASCII 00 hex ... 1F hex> | <ASCII 7F hex>`

`<STX> :: = <ASCII 02 hex>`

`<ETX> :: = <ASCII 03 hex>`

`<carriage return> :: = <ASCII 0D hex>`

`<line feed> :: = <ASCII 0A hex>`

`<space> :: = <ASCII 20 hex> | ' '`

`<valid character> :: = <printable character> | <carriage return> | <line feed>`

`<field character> :: = <ASCII 20 hex ... 29 hex> | <ASCII 2B hex ... 7E hex> | <carriage return> | <line feed>`

**The Design Specification Field**

<design spec> ::= {<field character>}\*\*

The first field sent in a JEDEC transmission is the design specification. Both the full and kernel JEDEC formats accept the design specification field. This field is mandatory and it does not have an identifier (such as an asterisk) signaling its beginning. The design specification field consists of general device information. It could, for example, consist of the following information: your name, your company's name, the date, the device name and manufacturer, design revision level, etc. This field is terminated by an asterisk character. Examine the sample transmission shown on the next page of this description -- the first three lines of the file comprise the design specification field. UniSite ignores the contents of this field for downloads and places "Data I/O" in this field for upload operations.

---

*Note: You do not need to send any information in this field if you do not wish to; a blank field, consisting of the terminating asterisk, is a valid design specification field.*

**The Transmission Checksum Field**

<xmit checksum> ::= <hex digit>:4

The transmission checksum is the last value sent in a JEDEC transmission. The full JEDEC format requires the transmission checksum. The checksum is a 16-bit value, sent as a 4-digit hex number, and is the sum of all the ASCII characters transmitted between (and including) the STX and ETX. The parity bit is excluded in the calculation of the transmission checksum.

Some computer systems do not allow you to control what characters are sent, especially at the end of a line. You should set up the equipment so that it will accept a dummy value of 0000 as a valid checksum. This zero checksum is a way of disabling the transmission checksum, while still keeping within the JEDEC format rules.

## JEDEC Full Format, Code 91

The full JEDEC format consists of a start-of-text character (STX), various fields, an end-of-text character (ETX), and a transmission checksum. A sample JEDEC transmission sent in the full format is shown in Figure 7-18. Each of the fields is described on the following pages.

**Figure 7-18**  
*An Example of JEDEC Full Format*

[illegible]

**JEDEC Field Syntax**

<field> ::= [<delimiter>]<field identifier>[<field character>]\*

<field identifier> ::= 'A' | 'C' | 'D' | 'F' | 'G' | 'K' | 'L' | 'N' | 'P' |  
'Q' | 'R' | 'S' | 'T' | 'V' | 'X'

<reserved identifier> ::= 'B' | 'E' | 'H' | 'I' | 'J' | 'M' | 'O' | 'U' | 'W'  
| 'Y' | 'Z'

Following the design specification field in a JEDEC transmission can be any number of information fields. Each of the JEDEC fields begins with a character that identifies what type of field it is. Fields are terminated by using an asterisk character. Multiple character identifiers can be used to create sub-fields (i.e., A1, A\$, or AB3). Although not required, you may use carriage returns (CR) and line feeds (LF) to improve readability of the data.

**Field Identifiers**

Field identifiers which are currently used in JEDEC transmissions are shown above on the "field identifiers" line. The "reserved identifier" line indicates characters not currently used (reserved for future use as field identifiers). JEDEC field identifiers are defined as follows:

A	Access time	N	Note field
B	*	O	*
C	Checksum field	P	Pin sequence
D	Device type	Q	Value field
E	*	R	Resulting vector field
F	Default fuse state field	S	Starting vector
G	Security fuse field	T	Test cycles
H	*	U	*
I	*	V	Test vector field
J	*	W	*
K	Fuse list field (hex format)	X	default test condition
L	Fuse list field	Y	*
M	*	Z	*

\* Reserved for future use

**Device Field (D)**

Device selection by this field is not supported by UniSite. It has been replaced by the QF and QP fields and the manual selection of devices.

**Fuse Information Fields  
(L, K, F, C)**

<fuse information> ::= [<default state>] <fuse list> [<fuse list>] [<fuse checksum>]

<fuse list> ::= 'L' <number> <delimiter> [<binary-digit> [<delimiter>]]  
' \* '

<fuse list> ::= 'K' <number> <delimiter> [<hex-digit> [<delimiter>]] '\*\*

<default state> ::= 'F' <binary-digit> ' \* '

<fuse checksum> ::= 'C' <hex-digit>:4 ' \* '

Each fuse of a device is assigned a decimal number and has two possible states: zero, specifying a low-resistance link, or one, specifying a high resistance link. The state of each fuse in the device is given by three fields: the fuse list (L field or K field), the default state (F field), and the fuse checksum (C field).

Fuse states are explicitly defined by either the L field or the K field. The character L begins the L field and is followed by the decimal number of the first fuse for which this field defines a state. The first fuse number is followed by a list of binary values indicating the fuse states.

The information in the K field is the same as that of the L field except that the information is represented by hex characters instead of binary values. This allows more compact representation of the fusemap data. The character K begins the K field and is followed by the decimal number of the first fuse. The fuse data follows the fuse number and is represented by hex characters. Each bit of each hex character represents the state of one fuse, so each hex character represents four fuses. The most significant bit of the first hex character following the fuse number corresponds to the state of that fuse number. The next most significant bit corresponds to the state of the next fuse number, etc. The least significant bit of the first hex character corresponds to the state of the fuse at the location specified by the fuse number plus three.

The K field supports download operations only. The K field is not part of the JEDEC standard, but is supported by Data I/O for fast data transfer. The L and K fields can be any length desired, and any number of L or K fields can be specified. If the state of a fuse is specified more than once, the last state specified replaces all previous ones for that fuse. The F field defines the states of fuses that are not explicitly defined in the L or K fields. If no F field is specified, all fuse states must be defined by L or K fields.

The C field, the fuse information checksum field, is used to detect transmitting and receiving errors. The field contains a 16-bit sum (modulus 65535) computed by adding 8-bit words containing the fuse states for the entire device. The 8-bit words are formed as shown in the following figure. Unused bits in the final 8-bit word are set to zero before the checksum is calculated.

Word 00	msb							lsb
Fuse No.	7	6	5	4	3	2	1	0
Word 01	msb							lsb
Fuse No.	15	14	13	12	11	10	9	8
Word 62	msb							lsb
Fuse No.	503	-	-	-	499	498	497	496

Following is an example of full specification of the L, C, and F fields:

```
F0*L0 01010101* L0008 01010111* L1000 0101*C019E*
```

Following is an alternate way of defining the same fuse states using the K field:

```
F0*K0 55* K0008 57* K1000 5* C019E*
```

Another example, where F and C are not specified:

```
L0200 011010101010101011
010111010110100010010010010*
```



**The Security Fuse Field (G)**

<security fuse>::='G'<binary-digit>''

The JEDEC G field is used to enable the security fuse of some logic devices. To enable the fuse, send a 1 in the G field:

G1\*

**The Note Field (N)**

<note>::='N'<field characters>''

The note field is used in JEDEC transmission to insert notes or comments. UniSite will ignore this field: it will not be interpreted as data. An example of a note field would be:

N Test Preload\*

**The Value Fields (QF, QP, and QV)**

JEDEC value fields define values or limits for the data file, such as number of fuses. The QF subfield defines the number of fuses in the device. All of the value fields must occur before any device programming or testing fields appear in the data file. Files with ONLY testing fields do not require the QF field and fields with ONLY programming data do not require the QP and QV fields.

The QF subfield tells UniSite how much memory to reserve for fuse data, the number of fuses to set to the default condition, and the number of fuses to include in the fuse checksum. The QP subfield defines the number of pins or test conditions in the test vector, and the QV subfield defines the maximum number of test vectors.

**The P Field**

The P field remaps the device pinout and is used with the V (test vector) field. An asterisk terminates the field. The syntax of the field is as follows:

<pin list>::='P'<pin number>:N''

<pin number>::=<delimiter><number>

The following example shows a P field, V field and the resulting application:

P 1 2 3 4 5 6 14 15 16 17 7 8 9 10 11 12 13 18 19 20 \*

V0001 111000HLHHNNNNNNNNNNNN\*

V0002 100000HHHLNNNNNNNNNNNN\*

The result of applying the above P and V fields is that vector 1 will apply 111000 to pins 1 through 6, and HLHH to pins 14 through 17. Pins 7 through 13 and 18 through 20 will not be tested.

**Test Field (V field)**

`<function test> :: = [<pin list>] <test vector> {<test vector>}`  
`<pin number> :: = <delimiter> <number>`  
`N :: = number of pins on device`  
`<test vector> :: = 'V' <number> <delimiter> < test condition> :N ' * '`  
`<test condition> :: = <digit> 'B' | 'C' | 'D' | 'F' | 'H' | 'K' | 'L' | 'N' | 'P' | 'U' | 'X' | 'Z'`  
`<reserved condition> :: = 'A' | 'E' | 'G' | 'I' | 'J' | 'M' | 'O' | 'Q' | 'R' | 'S' | 'T' | 'V' | 'W' | 'Y' | 'Z'`

Functional test information is specified by test vectors containing test conditions for each device pin. Each test vector contains *n* test conditions where *n* is the number of pins on the device. The following table lists the conditions that can be specified for device pins.

When using structured test vectors to check your logic design, do NOT use 101 or 010 transitions as tests for clock pins: use C, K, U, or D instead.

**Test Conditions**

0 Drive input low  
 1 Drive input high  
 2-9 Drive input to supervoltage #2-9  
 B Buried register preload (not supported)  
 C Drive input low, high, low  
 D Drive input low, fast slew  
 F Float input or output  
 H Test output high  
 K Drive input high, low, high  
 L Verifies that the specified output pin is low  
 N Power pins and outputs not tested  
 P Preload registers  
 U Drive input high, fast slew  
 X Output not tested, input default level  
 Z Test input or output for high impedance

---

*Note: C, K, U, D are clocking functions that allow for setup time.*

The C, K, U, and D driving signals are presented after the other inputs are stable. The L, H, and Z tests are performed after all inputs have stabilized, including C, K, U, and D.

Test vectors are numbered by following the V character with a number. The vectors are applied in numerical order. If the same numbered vector is specified more than one time, the data in the last vector replaces any data contained in previous vectors with that number.

The following example uses the V field to specify functional test information for a device:

```

V0001 C01010101NHLLHHLHLN *
V0002 C01011111NHLLHLLLHLN *
V0003 C10010111NZZZZZZZZN *
V0004 C01010100NFLHHLFFLLN *
  
```

## JEDEC Kernel Mode, Code 92

<kernel>::=<STX><design spec><min. fuse information><ETX><xmit checksum>

<design spec>::={<field character>}\*\*

<min. fuse information>::=<fuse list>{<fuse list>}

You may use the JEDEC kernel format if you wish only to send the minimum data necessary to program the logic device, for example, if you do not want to send any test vectors. If you specify format code 92, UniSite will ignore everything except the design specification field and the fuse information field. The following fields will be ignored if format 92 is specified: C, F, G, Q, V, and X. Also, the security fuse will be set to zero and the transmission checksum will be ignored.

Figure 7-19 shows an example of a kernel JEDEC transmission.

**Figure 7-19**  
*An Example of JEDEC  
Kernel Mode Format*

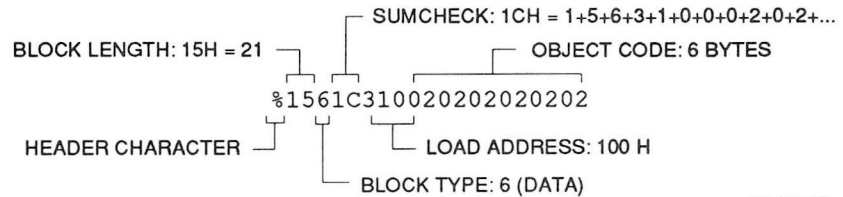
```
<STX>
Acme Logic Design   Jane Engineer   Feb. 29 1983
Widget Decode 756-AB-3456 Rev C Device Mullard 12AX7*
L0000 1111111011 1111111111 1111000000 0000000000
      0000000000 0000000000 0000000000 0000000000
      0000000000 0000000101 1111111111 1111111111
      0000000000 0000000000 0000111101 1111111111
      1111111111 1111110111 1111111111 1111111111*
L0200 1110101111 1111110000 0000000000 0000000000
      1111111111 1111011011 1111111111 1111111110
      0111111111 1111111111 1111111110 1111111111
      1111111111 1111101111 1111111111 1111101111
      0000000000 0000000000 0000*
<EXT>0000
```

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## Extended Tektronix Hexadecimal Format, Code 94

The Extended Tektronix Hexadecimal format has three types of records: data, symbol and termination records. The data record contains the object code. Information about a program section is contained in the symbol record (UniSite ignores symbol records) and the termination record signifies the end of a module. The data record (see sample below) contains a header field, a load address and the object code. Figure 7-20 lists the information contained in the header field.

**Figure 7-20**  
An Example of Tektronix  
Extended Format



095-0092-002

Item	No. of ASCII Characters	Description
%	1	Signifies that the record is the Extended Tek Hex format.
Block length	2	Number of characters in the record, minus the %.
Block type	1	6 = data record 3 = symbol record (ignored by UniSite) 8 = termination record
Checksum	2	A 2-digit hex sum, modulo 256, of all the values in the record except the % and the checksum.

### Character Values for Checksum Computation

The number of fields in the file will vary, depending on whether a data or a termination block is sent. Both data and termination blocks have a 6-character header and a 2-to-17 character address.

Character(s)	Value (decimal)	Character(s)	Value (decimal)
0 . . 9	0 . . 9	. (period)	38
A . . Z	10 . . 35	_(underline)	39
\$	36	a . . z	40 . . 65
%	37		

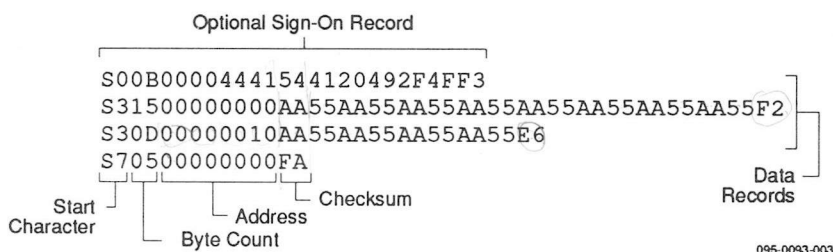
The load address determines where the object code will be located. This is a variable length number that may contain up to 17 characters. The first number determines the address length, with a zero signifying a length of 16. The remaining characters of the data record contain the object code, 2 characters per byte.

When you copy data to the port or to RAM, set the high-order address if the low-order is not at the default value.

## Motorola 32-Bit Format, Code 95

The Motorola 32-bit format closely resembles the Motorola EXORmacs format, the main difference being the addition of the S3 and S7 start characters. The S3 character is used to begin a record containing a 4-byte address. The S7 character is a termination record for a block of S3 records. The address field for an S7 record may optionally contain the 4-byte instruction address that identifies where control is to be passed and is ignored by UniSite. Figure 7-21 shows a sample of the Motorola 32-bit format.

**Figure 7-21**  
An Example of Motorola  
S3 Format



Motorola data files may begin with an optional sign-on record, initiated by the start characters S0. Data records start with an 8- or 10-character prefix and end with a 2-character suffix.

Each data record begins with the start characters S1, S2 or S3. S1 if the following address field has 4 characters, S2 if it has 6 characters, S3 if it has 8 characters. The third and fourth characters represent the byte count, which expresses the number of data, address and checksum bytes in the record. The address of the first data byte in the record is expressed by the last 4 characters of the prefix (6 characters for addresses above hexadecimal FFFF and 8 characters for addresses above hexadecimal FFFFFFFF). Data bytes follow, each represented by 2 hexadecimal characters. The number of data bytes occurring must be 3, 4 or 5 less than the byte count. The suffix is a 2-character checksum, the one's complement (in binary) of the preceding bytes in the record, including the byte count, address and data bytes.

The end-of-file record begins with an S9 start character. Following the start characters are the byte count, the address and a checksum. The maximum record length is 250 data bytes.

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## Hewlett-Packard UNIX Format, Code 96

This format divides the data file into data records; each with a maximum size of 250 bytes not including header information. An ID header is added to the beginning of the first record. Each subsequent record has its own header section. The section at the beginning of the file contains the following elements: the header 8004, filename, byte count for the processor information record, and the processor information record.

The header 8004 identifies the type of file being transferred. The first byte of this header (80) indicates that this file is binary and the 04 indicates the type of file (absolute).

The ID header is followed by a 16-byte filename (not used by UniSite).

Next is the byte count, which indicates the size (minus one) of the Processor Information Record that follows. The Processor Information Record is divided into the following data words: Data Bus Width, Data Width Base, Transfer Address LS (least significant), and Transfer Address MS (most significant).

The Data Bus Width represents the width of the target system's bus (in bits). The Data Width Base represents the smallest addressable entity used by the target microprocessor.

The Data Bus Width and Data Width Base are not used by UniSite during download. During upload, the Data Bus Width will be set to the current Data Word Width, and the Data Width Base will be set to 8. The Transfer Address LS and Transfer Address MS are not used by UniSite.

The data records consist of a header (8 bytes) and the data bytes. The first 2 bytes of the header indicate the size of the data record including the header (minus one). If the number of data bytes in the data record (not including the header) is odd, one extra byte will be added to the data record to ensure that an even number of data bytes exist in the data record. The maximum value for this field is 00FF hex. The next two bytes indicate the number of actual data bytes in the record, not including the header bytes and the extra byte (if present). The maximum value for this field is 00FA hex. The 4 bytes that follow represent the destination address for the data in this record. The rest of the bytes in the record are the data bytes.

This format has no end of file identifier.

Diagram illustrating the structure of the Processor Information Record (PIR) and its associated fields:

- Byte Count = 7**: Points to the first 7 bytes of the record.
- 8 words for file name**: Points to the first 8 words (16 bytes) of the record.
- Header**: Points to the first 8 bytes of the record.
- Data Width Base**: Points to the first 8 bytes of the record.
- Transfer Address MS**: Points to the first 8 bytes of the record.
- Transfer Address LS**: Points to the first 8 bytes of the record.
- Data Bus Width**: Points to the first 8 bytes of the record.
- Number of bytes in the following record including header**: Points to the first 8 bytes of the record.
- Number of bytes in the following record not including header**: Points to the first 8 bytes of the record.
- Load Address LS Word**: Points to the first 8 bytes of the record.
- Load Address MS Word**: Points to the first 8 bytes of the record.
- Data Record**: Points to the first 8 bytes of the record.
- End of first 124 record words**: Points to the first 8 bytes of the record.
- Number of bytes in the following record not including header (or extra byte if present)**: Points to the first 8 bytes of the record.
- Load Address LS Word**: Points to the first 8 bytes of the record.
- Load Address MS Word**: Points to the first 8 bytes of the record.
- Data Record**: Points to the first 8 bytes of the record.

095-0474-002

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## **Intel OMF386 Format, Code 97**

This data translation format is considered, by Intel, to be proprietary information. Contact your local Intel representative or call (408) 987-8080 for information about the structure of this format.



## Intel OMF286 Format, Code 98

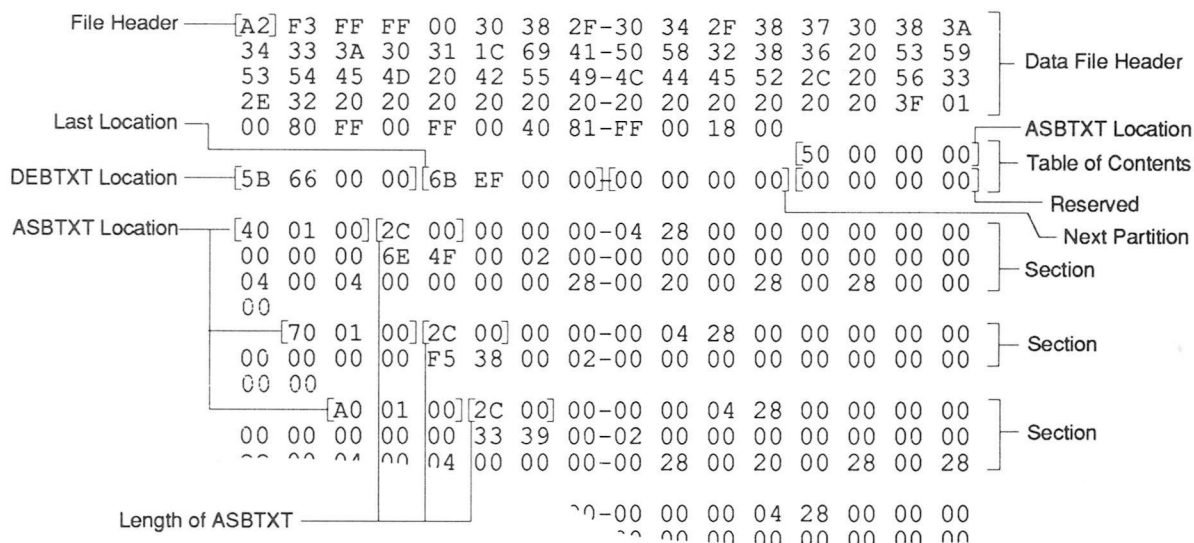
The Intel OMF286 format is a dynamically allocatable file format.

This format has three basic parts: the file header, data file module, and a 1-byte checksum. The file header is hexadecimal number (A2) that identifies this file as an Intel OMF 286 format file. See Figure 7-23.

The first 75 bytes of the data file module is the data file header. The header information is generated and used by the development system and is not used by UniSite, although some characters must fill those bytes. The rest of the data file module consists of one partition.

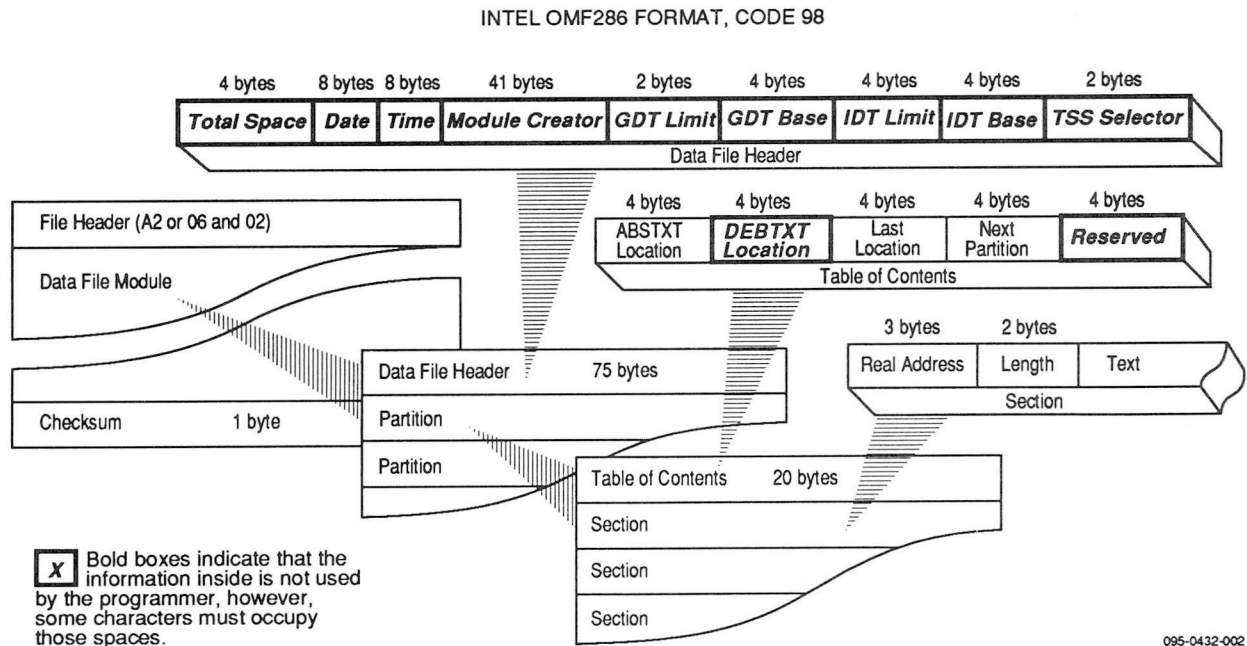
The partition begins with a 20 byte table of contents. The table of contents specifies the locations of ABSTXT (absolute text), DEBTEXT (debug text), the last location of this partition, and the location of the next partition. The OMF286 format consists of only one partition so this field will be zeros. The rest of the partition consists of sections. The actual data is located in the sections. The first 3 bytes in each section specifies the real address of the text; the next 2 bytes state the length of the text and the remainder of the section is the text (or data). Following the final section of the final partition is a 1-byte checksum representing the complement of the sum of all the bytes in the file including the header. The sum of the checksum byte and the calculated checksum for the file should equal zero. UniSite ignores this checksum.

Figure 7-23  
A Sample of the Intel  
OMF286 Format



095-0431-002

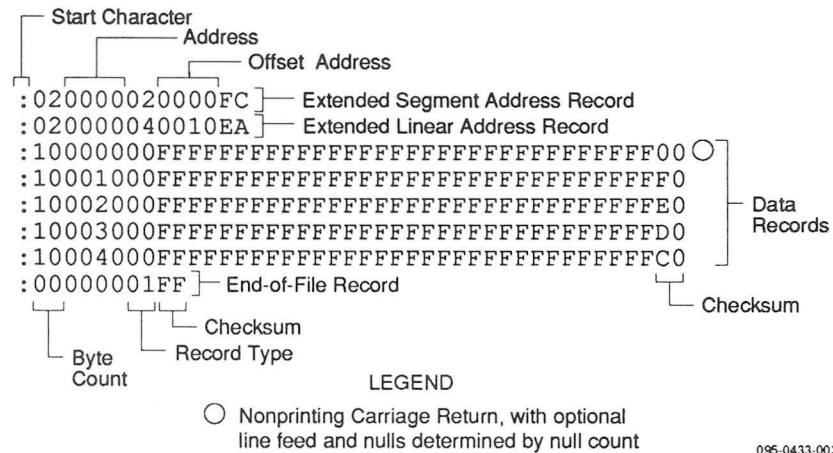
**Figure 7-24**  
A Close-up of the Intel OMF286 Format



## Intel Hex-32, Code 99

The Intel 32-bit Hexadecimal Object file record format has a 9-character (4-field) prefix that defines the start of record, byte count, load address, and record type and a 2-character checksum suffix. Figure 7-25 illustrates the sample records of this format.

**Figure 7-25**  
*An Example of the Intel Hex-32 Format*



The six record types are described below.

### 00 –Data Record

This record begins with the colon start character, which is followed by the byte count (in hex notation), the address of the first data byte, and the record type (equal to 00). Following these are the data bytes. The checksum follows the data bytes and is the two's complement (in binary) of the preceding bytes in the record, including the byte count, address, record type and data bytes.

### 01 –End Record

This end-of-file record also begins with the colon start character and is followed by the byte count (equal to 00), the address (equal to 0000), the record type (equal to 01) and the checksum, FF.

### 02 –Extended Segment Address Record

This is added to the offset to determine the absolute destination address. The address field for this record must contain ASCII zeros (Hex 30s). This record type defines bits 4 to 19 of the segment base address; it can appear randomly anywhere within the object file and affects the absolute memory address of subsequent data records in the file. The following example illustrates how the extended segment address is used to determine a byte address.

**Problem**

Find the address for the first data byte for the following file.

```
:02 0000 04 0010 EA
:02 0000 02 1230 BA
:10 0045 00 55AA FF ..... BC
```

**Solution:**

- Step 1. Find the extended linear address offset for the data record (0010 in the example).
- Step 2. Find the extended segment address offset for the data record (1230 in the example).
- Step 3. Find the address offset for the data from the data record (0045 in the example).
- Step 4. Calculate the absolute address for the first byte of the data record as follows:

00100000	Linear address offset, shifted left 16 bits
+ 12300	Segment address offset, shifted left 4 bits
+ 0045	Address offset from data record
<u>00112345</u>	32-bit address for first data byte

The address for the first data byte is 112345.

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*Note: Always specify the address offset when using this format, even when the offset is zero.*

During output translation, the firmware will force the record size to 16 (decimal) if the record size is specified greater than 16. There is no such limitation for record sizes specified less than 16.

**03 –Start Segment Address Record**

This record, which specifies bits 4-19 of the execution start address for the object file, is not used by UniSite.

**04 –Extended Linear Address Record**

This record specifies bits 16-31 of the destination address for the data records that follow. It is added to the offset to determine the absolute destination address and can appear randomly anywhere within the object file. The address field for this record must contain ASCII zeros (Hex 30s).

**05 –Start Linear Address Record**

This record, which specifies bits 16-31 of the execution start address for the object file, is not used by UniSite.

## Highest I/O Addresses

The following table shows the highest I/O addresses accepted for each Data Translation Format.

Format Number	Format Name	Highest Address (hex bytes)
01-03	ASCII (BNPF, BHLF, and B10F)	N/A
04	Texas Instruments SDSMAC (320)	1FFFF (FFFF words)
05-07	ASCII (BNPF, BHLF, and B10F)	N/A
08-09	5-level BNPF	N/A
10	Binary (formatted)	N/A
11	DEC Binary	N/A
12-13	Spectrum	270F
14	POF	N/A
30-32	ASCII-Octal (Space, Percent, and Apostrophe)	3FFFF (777777 octal)
35-37	ASCII-Octal (Space, Percent, and SMS)	3FFFF (777777 octal)
50-52	ASCII-Hex (Space, Percent, and Apostrophe)	FFFF
55-58	ASCII-Hex (Space, Percent, SMS, and Comma)	FFFF
70	RCA Cosmac	FFFF
80	Fairchild Fairbug	FFFF
81	MOS Technology	FFFF
82	Motorola Exorciser	FFFF
83	Intel Intellec 8/MDS	FFFF
85	Signetics Absolute Object	FFFF
86	Tektronix Hexadecimal	FFFF
87	Motorola Exormax	FFFFFFF
88	Intel MCS-86 Hex Object	FFFFFFF
89	Hewlett-Packard 64000 Absolute	FFFFFFFFF
90	Texas Instruments SDSMAC	FFFF
91-92	Jedec (Full and Kernel)	N/A
94	Tektronix Hexadecimal Extended	FFFFFFFFF
95	Motorola 32 bit (S3 record)	FFFFFFFFF
96	Hewlett-Packard UNIX Format	FFFFFFFFF
97	Intel OMF 386	FFFFFFFFF
98	Intel OMF 286	FFFFFFF
99	Intel Hex-32	FFFFFFFFF

# 8 Messages

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This chapter lists and describes UniSite's system and error messages. If a message requires action, instructions for that action are included in the message's description. Messages are listed in alphabetical order.

Some system and error messages were not documented in this chapter because UniSite provides online help for these messages. To access the online help for a message, press **F3** or **?** when the message appears.

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*Note: PSM (Package Specific Module) and FSM (Function Specific Module) refer to the modules that are installed on UniSite's front panel. The PSM is the small module located on the left side of the top panel; the FSM is the optional, large module on the right.*

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## Message List

**0 div err**

UniSite has experienced a divide-by-zero error that it cannot recover from. This is a fatal error; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.

**Addr err**

UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

<b>Address out of range</b>	The address you tried to select is beyond the selected device's range. Select an address that is within the limits of the device or select a different device. This message appears while you are in the memory editor, fuse editor, or using the under/overflow feature.
<b>Altera POF translator must be selected for POF devices</b>	This message appears when you have selected an Altera POF device and attempt a data transfer operation, such as a download, and have not selected the POF data translation format. Select the POF format as the data translation format and try the operation again.
<b>ASCII entry not allowed in 4-bit mode</b>	This message appears in the memory editor when attempting to go into ASCII entry mode when a 4-bit device is selected. Re-select device or edit in hex mode only.
<b>Beginning of file</b>	This message appears when you are viewing the first block of data and press <b>Ctrl</b> + <b>P</b> (previous page) when you are using the memory editor, vector editor, fuse editor, or the under/overflow feature.
<b>Begin address too large</b>	The beginning address you selected in the memory editor was too large and is beyond the limits of the selected device. Change the begin address to one within the device's range.
<b>Bootting non-system disk. Insert system disk. Type ESC and CTRL W to reboot.</b>	This message will appear if UniSite detects a disk other than the System disk installed in drive A during power up. Insert the System disk.
<b>Bus err</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.
<b>Bytes copied = nnnnnn</b>	This message appears while the Copy File operation is in progress; <i>nnnnnn</i> refers to the number of bytes copied.
<b>Cannot access system disk</b>	This message indicates a non-system disk is installed. Make sure the Algorithm disk and System disk are installed.
<b>Calculating sumcheck</b>	This message appears when you are using the Device Check's Sumcheck screen, informing you that the RAM sumcheck is being calculated.
<b>[Computer Remote Control: enter Control-Z to exit.]</b>	This message informs you that UniSite is now in remote control mode and all programmer commands are now read from the remote port. Typing <b>Ctrl</b> + <b>Z</b> returns control to terminal mode.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

<b>Constant over-current fault</b>	This message indicates that an over-current condition exists and UniSite is unable to clear the condition. The over-current could be caused by a hardware failure in UniSite. Reboot the system. If the condition persists, contact Data I/O Customer Support Office.
<b>Constructing Job File Directory</b>	The job files are now being read, in order to put together a job file directory. You can then select one of the files for playback.
<b>Copying file1.ext to file2.ext. Bytes copied = xxxx</b>	This message appears during a Copy operation if you are using the wildcard designation. xxxx in the display is the number of bytes copied into the destination file.
<b>Copying sectors ssss - ssss+120 Reading source disk</b>	This message appears while the Disk Copy command is proceeding. The information presented in this message displays the number of sectors copied in each pass. There are 1440 sectors on each disk. This message is accompanied by the message "Copying sectors ssss - ssss Writing destination disk" which appears while UniSite is writing data onto the destination disk.
<b>Copying sectors ssss - ssss+120 Writing destination disk</b>	This message appears during the Disk Copy routine, indicating that the data is being copied.
<b>Could not initialize default system parameters from disk</b>	When UniSite was booting up, the default and programming system parameters could not be loaded. Reboot UniSite with a different system disk, or contact Data I/O Customer Support for assistance.
<b>Data transfer complete</b>	This message appears after a data transfer with an external source was successfully completed.
<b>Data transfer complete. Data Sum = sssssss</b>	After a data transfer, this message appears. The data sum represents the calculated sumcheck for the data bytes transferred.
<b>Data transfer complete. Data Sum = ssss. Xmit = ssss.</b>	After a data transfer of a JEDEC file, this message appears. The data sum represents the calculated checksum for the data bytes in the fusemap section of the data transferred. The Xmit sum represents the calculated checksum for all the bytes transferred.
<b>Data transfer complete. Data Sum = ssss. POF CRC = ssss.</b>	After a data transfer of a POF file, this message appears. The data sum represents the calculated checksum for the data bytes transferred. The POF CRC represents the calculated Cyclic Redundancy Check for all the bytes in the POF file up to, but not including, the CRC value.



*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

**Data operation complete: data saved on disk**

After a data file is downloaded to disk, this message appears.

**Destination file already exists. Hit return to continue, ^Z to abort.**

The filename that you have designated as the destination for the data already exists, so existing data will be written over if you execute the operation. This is a precautionary message which occurs on any file operation which could overwrite an existing file.

**Disk boot err**

UniSite has experienced an error that it cannot recover from. Turn UniSite off and reboot the system. If the problem persists, use another copy of the System disk.

**Disk data error**

The read or write operation that was attempted could not be completed because there is a problem with the disk; try the operation again with a different disk.

**Disk duplication overwrites user RAM. Hit Return to continue, ^Z to abort.**

If you copy a disk, UniSite uses User RAM as a buffer. Anything already in User RAM will be overwritten. If you don't want to change User RAM, type **Ctrl** + **Z** to halt the disk duplication. Press **Enter** to proceed with the operation.

**Disk error, terminal type not saved!**

If you try to save the terminal type as one of the power-up parameters and there is a write problem with the disk (the disk is either full or is defective), this message will appear.

**Disk open error. Type ESC and Control W to reboot.**

This message appears if you try to boot UniSite without the System disk in the disk drive. Insert the System disk in the disk drive and reboot UniSite.

**Disk write-protected, terminal type not saved!**

If you try to save the terminal type as one of the power-up parameters and the disk is write-protected, this message will appear. Move the write-protect slide so that the hole through the disk is blocked.

**Done.**

The operation is completed. Proceed to the next operation you want to perform.

**Done. Bytes copied = nnnnnn**

This message appears after the Copy File operation is complete. It displays the size of the file that was copied in hexadecimal bytes. Proceed to the next operation you want to perform.

**End of file**

This message appears when you are viewing the last block of data and press **Ctrl** + **N** (next page) when you are using the memory editor, vector editor, fuse editor, or the over/under blow feature.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

<b>Fatal system err</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.
<b>FILE ERROR: Can't reach track 0.</b>	If this message appears, a fatal disk error has occurred. The disk drive may be faulty. Contact Data I/O Customer Support.
<b>FILE ERROR: Error in sector preamble.</b>	This error appears when UniSite detects an error with the format of a disk. Use a different disk or reformat the existing disk and try the operation again.
<b>FILE ERROR: No disk in drive.</b>	This message appears when UniSite is trying to access a disk file but the disk drive is empty. Insert the disk with the file to be used.
<b>FILE ERROR: Track not found.</b>	This message appears if UniSite cannot find the disk track associated with the system file, or cannot find the data needed to support whatever action you just requested. If you try the operation again and the error message reappears, a new disk (or a new copy of whatever software or data the unit needs) must be used.
<b>File not initialized! Enter 'C' to initialize, any other key to quit</b>	This message appears within the fuse editor, vector editor or when the under/overflow feature is selected. The file that you have selected is not in a format that is compatible with the feature that you want to use. If you want to use the fuse editor, and the data file you have is not formatted for the device you have selected, typing <b>C</b> reformat the data file to be compatible with the device.
<b>Formatting and initializing user disk.</b>	This message appears while a disk is being formatted.
<b>Hit PF3 or ? to view device specific message</b>	The selected device has specific information associated with it.
<b>Hit return to continue, ^Z to abort.</b>	This message appears after a Verify operation has failed. If you want to ignore the warning and not examine the errors, and proceed with the verify operation, press <b>↓</b> . If you want to investigate the verify errors, press <b>Ctrl</b> + <b>Z</b> and the Verify screen will reappear.
<b>Hit return to switch user menu port, ^Z to abort.</b>	This message is displayed whenever you toggle the User Menu Port parameter. To cancel the port switch operation, press <b>Ctrl</b> + <b>Z</b> , otherwise, press <b>↓</b> to switch the port. The cable between the programmer and the PC (or terminal) should then be moved to the port specified by the parameter.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

<b>IOX init err</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system.
<b>Illegal instr err</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system.
<b>Illegal Key Input: Type control-Z to abort parameter entry.</b>	You pressed a key that is illegal for the field where the cursor is positioned. For example, if you type in a hex number for the Data Word Width field (only decimal numbers are allowed), this message will appear.
<b>Illegal terminal type!</b>	The terminal type number you entered was not one of the choices presented on the Terminal Type screen. Type in a valid terminal type number.
<b>Insert blank device. Hit return.</b>	This message appears during a Quick Copy operation. Remove the newly programmed device or the master device from the device socket, place a blank device in the socket and press <b>↵</b> . UniSite will then begin programming the blank device with RAM data loaded from the master device.
<b>Insert destination disk. Hit return to continue.</b>	This message may appear during the Duplicate Disk or Copy File operation. When this message appears, remove the source disk, insert the destination disk (the disk where you want the data to go to) and press <b>↵</b> . Make sure to use a formatted disk: if you insert an unformatted disk, UniSite will abort the operation and display "Sector not found." If this occurs, perform the Format Disk operation and restart the Duplicate Disk or Copy File operation.
<b>Insert master device. Hit return to continue.</b>	This message appears during a Quick Copy operation. Place the master device into the device socket, lock it into place, and press <b>↵</b> . UniSite will then start to load RAM with data from the master device.
<b>Insert blank device. Hit return to continue or push START lever forward</b>	This message appears during a Quick Copy operation if you are using the SetSite module. Place the blank devices into the SetSite sockets, lock them into place and press <b>↵</b> or move the socket lever to the START position. UniSite will then start to program the parts with data from RAM.
<b>Insert master device. Hit return to continue or push START lever forward</b>	This message appears during a Quick Copy operation if you are using the SetSite module. Place the master device into device socket number one, lock it into place, and press <b>↵</b> or move the socket lever to the START position. UniSite will then start to load RAM with data from the master device.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **[F3]** or **[?]** when the message appears.*

<b>Insert source disk. Hit return to continue.</b>	This message appears during a Duplicate Disk operation. When this message appears, remove the destination disk from the disk drive, insert the source disk and press <b>[↵]</b> .
<b>Job file playback ended.</b>	This message informs you that a job file's playback has ended and you may continue with the operation where the job file left off.
<b>Job file save aborted. Keystrokes not recorded.</b>	This message appears in the following situation: If you attempt to end job file recording, and either the system disk is not in the drive or UniSite has difficulty reading the disk, an error message will appear. If you press <b>[Ctrl] + [Z]</b> after seeing that message, the above message will appear.
<b>Keystroke recording ended. Select job file for saving.</b>	This message appears after you have pressed <b>[Esc] [Ctrl] + [J]</b> a second time to end recording keystrokes for a job file. Specify a job file number, by typing a number between 0 and 9. Then type in a job file description.
<b>Keystroke recording for job file has begun.</b>	After you press <b>[Esc] [Ctrl] + [J]</b> once, this message will appear. You are now in the job file record mode: every keystroke that you make will be recorded. Type <b>[Esc] [Ctrl] + [J]</b> a second time to end the session.
<b>Loading data from file.</b>	This message appears while data is being loaded into User RAM from a disk's data file.
<b>Loading device algorithm</b>	When you restore a set of system parameters that include a specific device, this message will appear while the programming algorithm is being loaded.
<b>Loading device algorithm file into user RAM.</b>	This message appears when the device programming algorithm is being loaded into User RAM at the first device selection operation after the RAM Device Selection parameter is enabled.
<b>Loading device menu data</b>	This message indicates that UniSite is loading the device and manufacturer selection files.
<b>Loading from disk.</b>	This message appears when UniSite is reading system information or routines from the disk.
<b>Loading programming parameters</b>	When you restore a set of system parameters from the Configuration file directory, this message will appear while the programming parameters are being loaded.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **[F3]** or **[?]** when the message appears.*

<b>Loop count nnnn = Hit CTRL Z to abort this test</b>	This message appears while a self-test is running in the continuous mode. The loop count <i>nnnn</i> is the number of times the selected test has been repeated.
<b>Memory parity error at:hhhhhh</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the problem persists, record the location at which the error is occurring (represented above by <i>hhhhhh</i> ), and contact Data I/O Customer Support Office.
<b>No disk in drive A.</b>	There is no disk in the disk drive. Insert the System disk into drive A and try the operation again.
<b>Non-blank device. Hit return to continue, ^Z to abort.</b>	This message appears after UniSite has performed a blank check on a device and has detected bits that are not in their erased or blank state, and are not illegal bits. If you press <b>[J]</b> , UniSite proceeds with the Programming operation and programs over the existing data. If you press <b>[Ctrl] + [Z]</b> , the Program screen will reappear and you can try the operation again with another device. The Blank Check parameter must be enabled before this test can be performed.
<b>Odd Memory Begin Address is not allowed</b>	This message appears when the Memory Begin Address is set to an odd number and you try a device operation on a 16-bit (or larger) device. Set the Memory Begin Address to an even number and retry the device operation.
<b>OPERATION COMPLETE.</b>	The operation you selected has been completed; you may now proceed with other operations.
<b>OPERATION COMPLETE. Device = hhhhhhhh.</b>	This message appears after a successful Compare Electronic ID operation. <i>hhhhhhhh</i> represents the device's electronic ID.
<b>OPERATION COMPLETE. Sumcheck = hhhhhhhh</b>	This message appears after the completion of a Program, Load, or Verify operation. <i>hhhhhhhh</i> represents the sumcheck of the data that was programmed into the device. "(Vector test not supported)" will be appended to the message when you attempt to perform a structured vector test on devices with more than 84 pins.
<b>OPERATION COMPLETE. Sumcheck = hhhhhhhh. Set Sumcheck = ssssssss</b>	This message appears after the completion of a Set Program, Load, or Verify operation. <i>hhhhhhhh</i> is the sumcheck of data that was just programmed into the last set member. <i>ssssssss</i> is the sumcheck of all the set members that have been programmed.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

**Options installed. Hit Return after changing your terminal settings.**

This message appears on the Serial Port Configuration screen after serial port parameters have been changed and **↵** has been pressed. When this message appears, UniSite suspends screen output until you press **↵** a second time. Make sure you configure the terminal to match the new settings for the serial port.

**Parameter Entered**

This message acknowledges that the parameter you entered was accepted.

**Parameter Field Full. Hit return or arrows to enter, CTRL Z to abort.**

This message appears when you try to enter too many characters into a parameter field. Press **↵**, **F1** or **F2** to enter the parameter.

**Power Down**

UniSite has experienced a power down condition.

**Pre-format check.**

This message appears when you have selected the Format Disk operation, and means that UniSite is checking to see if the disk you want to format is a system disk.

If this error occurs, go to the self-test screen and re-execute the test(s) that show status of F (Fail). If the test(s) fails while the device socket is empty, UniSite may require service. Contact Data I/O Customer Support.

**Purging filename.ext**

This message will appear if you are using the wildcard (\*) designation to purge more than one file at once; for example, type **27\*.dat** to delete both the files **27512.dat** and **27256.dat**.

**Reading user data file size**

This message appears while UniSite is reading the data file size from disk.

**Recording system state parameters.**

This message appears after you select a file number for the set of system parameters that you want to save. This message remains until UniSite is finished recording the parameters.

**Restoring system state variables.**

This message appears while UniSite is reading the recorded system variables from the selected file.

**RTC err**

UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.

**RTE init err**

UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

<b>Saving data to file.</b>	This message appears while data is being written to a file on disk.
<b>Saving parameters</b>	This message appears when UniSite is saving the selected variables onto the disk.
<b>Saving job file.</b>	This message appears when UniSite is saving a job file.
<b>Search pattern not found</b>	If you specified a data pattern for a file that does not contain that pattern, this message will appear. This message appears while UniSite is in the memory editor or in the under/overblow display.
<b>Security fuse violation. Hit return to continue, ^Z to abort</b>	This message appears when you try to program an EE device with the security fuse already blown. If you continue by pressing <b>↵</b> , the program operation will be performed and previous data in the device will be overwritten.
<b>System error. Please contact Data I/O.</b>	Contact Data I/O Customer Support.
<b>System parameters restored.</b>	This message appears when you have restored a configuration file from the Restore System Parameters screen.
<b>System parameters saved.</b>	This message appears when you save a set of system parameters.
<b>Task error</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.
<b>Testing</b>	This message appears when a self-test is in progress.
<b>TEST HALTED: Socket not empty, hit return to continue, ^Z to abort.</b>	The self-test that you are attempting requires that the device socket does not contain any devices. Remove the socketed part and try the operation again, or type <b>Ctrl</b> + <b>Z</b> to abort the operation.
<hr/> <b>CAUTION</b> <i>If you press the carriage return key, UniSite will run the test and the socketed device could be damaged.</i>	
<b>Transferring data.</b>	This message appears while a data transfer operation is being performed.



*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **[F3]** or **[?]** when the message appears.*

<b>[transparent mode]</b>	This message appears on the screen when UniSite enters the transparent mode. To exit transparent mode, type <b>[Esc][Ctrl] + [T]</b> .
<b>Trc init err</b>	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.
<b>Updating device algorithms</b>	This message appears when the algorithm disk is being updated in the Update Device Algorithms operation. Do not remove the algorithm disk or turn off system power for the duration of the operation.
<b>User RAM sumcheck = ssssssss</b>	This message contains the sumcheck for all of User RAM and is generated in the Sumcheck device check screen. This calculation is done regardless of whether user data is in RAM or on disk.
<b>Using Keep Current algorithm in filename.KCx</b>	This message appears when the "replaced" Keep Current algorithm is used during a normal device selection operation where <i>filename.KCx</i> is the Keep Current algorithm file.
<b>Vector out of range</b>	The vector you tried to select does not exist for the device you have selected. Select a vector that is within the limits of the device or select a different device. This message may appear while you are using the vector editor.
<b>Waiting for self-test completion.</b>	This power-up message shows up only if you are changing the terminal selection before the power-up self-test has been completed.
<b>WARNING Algorithm disk in drive. Hit return to continue, ^Z to abort.</b>	This message will appear if you are attempting a file operation and have the Algorithm disk installed in the disk drive.
<b>WARNING: System disk in drive. Hit return to continue, ^Z to abort.</b>	This message appears during any file operation that displaces disk data. Any information currently on the disk will be erased and is not retrievable. Press <b>[J]</b> to go ahead with the operation. Press <b>[Ctrl] + [Z]</b> , to cancel the operation.





# Glossary

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The terms listed below are used throughout this manual. Understanding these terms will reduce the chance of confusion while you go through the manual.

<b>Action Symbol</b>	Found in the upper left-hand corner of the screen, the action symbol rotates to indicate that the programmer is performing an operation.
<b>Address</b>	A coded instruction designating the location of data or program segments in storage.
<b>Address Offset</b>	A value subtracted from addresses during input translation and then added to addresses during output translation.
<b>Algorithm</b>	The software file containing information to program a specific device, usually contained on the UniSite Algorithm disk.
<b>All Parameters</b>	Also referred to as the complex parameters screen, the All Parameters screen displays all applicable parameters on a parameter entry screen.
<b>Approval</b>	Indication that a device manufacturer has tested an algorithm to support a specific device on a programmer. The level of an approval varies by device manufacturer, but an approval usually indicates both yield and waveform analysis.
<b>AutoBaud</b>	A special feature on UniSite that senses the baud rate of equipment connected to UniSite and sets UniSite's baud rate to match the equipment's baud rate.
<b>Base</b>	The interface between PinSite and the device. The Base routes the signals between the device and UniSite's Universal Pin Drivers.
<b>Baud Rate</b>	A measure of data flow. The number of signal elements per second based on the duration of the shortest element. When each element carries one bit, the Baud rate is numerically equal to bits per second.

<b>Blank Check</b>	A device check that checks a device for programmed bits. If no programmed bits are found, the device is considered blank.
<b>Block Size</b>	The hexadecimal number of bytes to be transferred in a data transfer. The beginning of the block is defined by a begin address, and the end of the block is the sum of the block size and the begin address minus one.
<b>Byte Swap</b>	See Odd/Even Byte Swap.
<b>Command Window</b>	The left side of the screen. At the top of the window is the menu name, displayed in uppercase letters. Below the menu name, the available commands are displayed in upper- and lowercase characters.
<b>Communications Parameters</b>	The various settings that determine the I/O characteristics of your equipment. The parameters include baud rate, stop bits, data bits, handshaking, etc.
<b>Compare Electronic ID</b>	A command that compares the electronic signature of the socketed device against the electronic signature specified in the currently selected algorithm.
<b>Compensated Vector Test</b>	A device test that enables load compensation on PLD output pins under test during vector testing. This may eliminate structured test errors when testing PLDs sensitive to output loading, where many of the devices register transitions simultaneously.
<b>Complex Parameter Screen</b>	See All Parameters.
<b>Computer Remote Control</b>	A command set that may be used to operate a programmer remotely. These commands are usually the basis for external programmer drivers, which may operate a programmer from a PC or other host. See also Remote Mode.
<b>Context-sensitive</b>	Information that changes depending on the screen position. With UniSite, every time you move the cursor to a different field, the information on the online help screen changes.
<b>Continuity Check</b>	A device check that tests for open device pins before performing a device operation.
<b>CRC</b>	An acronym for Computer Remote Control. See Remote Mode.
<b>Cross Programming</b>	A programming operation that allows a single generic programmable logic device (PLD) to be configured as any one of many PLD architectures. Consequently, the "generic" device can take on the function of many subset devices. As an example, a 16V8 generic PLD can be configured as a 16R4, 16R8, 16L8, etc.
<b>Data Bits</b>	A communication parameter that specifies the number of bits per byte.

<b>Data Representation</b>	The manner in which the data in user memory appears on the screen. You can select either X and -, or 0 and 1, where X and 0 represent an unprogrammed state, and - and 1 represent a programmed state.
<b>Data Word Width</b>	The word width of the data to be used during a device operation. For 8-bit (or above) devices, the maximum is 64, and the minimum word width is equal to the device width. For 4-bit devices, the word width can be 4, 8, 16, or 32. This value should match the word width of the data bus in the target system for the device being programmed.
<b>Destination</b>	The place to where you are sending something. The "something" you are sending to the destination is almost always data. The "where" you are sending the data can be RAM, a disk file, or one of the programmer's serial ports.
<b>Device Begin Address</b>	The first hexadecimal address of device data to use for a device operation. If programming, it represents the first address to program. If verifying, it represents the first address to verify.
<b>Device Block Size</b>	The size of device data to be used in device operations.
<b>Device Operation</b>	Usually a term that refers to loading, programming, or verifying. However it can also refer to other available commands, such as device checks and electronic erasing.
<b>Device Word Width</b>	The number of bits in the data word of the device.
<b>DIP</b>	A type of device package. An acronym for Dual In-line Package.
<b>Dialog Window</b>	The largest window on the screen. The dialog window displays different information and system parameters, depending on the selected command.
<b>Download Data</b>	A file operation that moves a data file from a host computer to the programmer's RAM or disk.
<b>Download Echoing</b>	Displays the data being downloaded.
<b>Download Host Command</b>	A command that is sent from the programmer to the host during a download. The command tells the host to begin sending data to the programmer.
<b>E-MICRO</b>	An acronym for Programmable Microcontroller. A type of device technology.
<b>EPROM</b>	An acronym for Erasable Programmable Read-Only Memory. (Usually refers to UV erasable memories.)
<b>EEPROM</b>	An acronym for Electrically Erasable Programmable Read-Only Memory. The device can be either completely or partially erased electrically in circuit or on the programmer.

<b>Electronic ID</b>	The combination of bytes that identify the device number and manufacturer of a programmable device.
<b>Enhanced Security Fuse Capability</b>	Found on EMICROs, the Enhanced Security Fuse Capability allows security fuse data to be stored in a data file. For more information, or to see if a device supports this capability, see the device manufacturers data book.
<b>ESD</b>	An acronym for Electro-Static Discharge.
<b>False Positive</b>	In programming, a misprogrammed fuse that retains minimal operational characteristics so that it passes the fuse test. These may be inadequately programmed, or over-programmed so that they will fail later in circuit.
<b>Family Code</b>	A 2- or 3-digit hexadecimal number that groups devices by their programming algorithms. When combined with the pinout code, the family code identifies the device you are using UniSite.
<b>Family/Pinout Code</b>	Two- or three-digit codes used by some Data I/O programmers to identify programming variables including pinout, address limit, and programming algorithms. Several similar devices can share the same, valid family/pinout code. And, because similar devices do not always share the same characteristics, some device checks will not be performed if you select a device with family/pinout codes. Thus, if you want specific device checks to be performed, you should select the device by manufacturer/part number.
<b>File Transfer Operations</b>	An operation involving the transfer of data between the programmer and a host. Upload and download are file transfer operations.
<b>Filename</b>	The name of the disk file to use during file operations. The filename must follow standard DOS conventions: up to eight alphanumeric characters, followed by an optional three-character file extension, with the two fields separated by a period. An example of a valid filename would be 27256.DAT or filename.c.
<b>Fuse Verification</b>	A type of post-programming device check that checks the fuse pattern programmed into a logic device with the pattern in user memory.
<b>Fusemap</b>	The fuse-level description portion of a programmable integrated circuit. Fusemaps are typically files in JEDEC Standard #3A and are downloaded to PLD programmers for device implementation.
<b>Handshaking</b>	The required sequence of signals for communication between two units. The I/O bus protocol for a unit defines its handshaking requirements. This is especially true for asynchronous I/O systems in which each signal requires a response to complete an I/O operation.
<b>High-speed Download</b>	A special feature of UniSite that allows UniSite to download data from a PC at 115.2K baud. To take advantage of this feature, you must be using HiTerm on a PC, you must enable the High Speed Download parameter, and you must send User Menu Data to the Remote port.

<b>High-speed Logic Drivers</b>	A device test that increases the speed of the logic transitions between 0 to 1 and 1 to 0 of the test vector input states. This test is a diagnostic tool designed to help debug and classify test vector failures. Specifically, this test is designed to help identify vector transitions that are speed dependent.
<b>Host</b>	A micro, mini, or mainframe computer used to control UniSite in Remote mode. You must use a software driver, such as Data I/O's PROMlink to allow the computer to communicate with UniSite.
<b>Host Command (download &amp; upload)</b>	The command that is sent from UniSite to the host system during uploading/downloading. See Download Host Command and Upload Host Command.
<b>I/O Address Offset</b>	This value influences the beginning address where data is stored during a file transfer operation. For uploads, the I/O Offset represents the address to start loading a formatted data file. For downloads, the I/O Offset is subtracted from the beginning address in the formatted data file. The result is then added to the memory begin address to determine where the block of data is loaded.
<b>I/O Timeout</b>	The amount of time that UniSite will wait for a data transfer to begin.
<b>I/O Translation Format</b>	See Translation Format.
<b>Illegal Bit</b>	An illegal bit is when a device contains a programmed location and the data file specifies that the location should be unprogrammed.
<b>Illegal Bit Check</b>	A test that determines whether or not a socketed device contains any illegal bits.
<b>Instrument Control Code</b>	A 1-digit number that signals or controls data transfers. It also implements a form of remote control that provides peripherals with flow control beyond that provided by software handshaking.
<b>JEDEC</b>	Joint Electron Design Engineering Committee: a committee of programmer and semiconductor manufacturers that provide common standards for programmable issues. Examples include: acceptable test characters for PLDs and standard data transfer/programming formats for PLDs. JEDEC Standard #3 is the industry standard for PLD formats.
<b>JEDEC Standard #3A</b>	The standard PLD data translation format, as defined by JEDEC for PLD design software to communicate with PLD programmers. It defines the states of all fuses in the device (the fusemap) and may include test vectors for DEVICE testing.
<b>JEDEC I/O translate DIP/LCC Vectors</b>	A feature on UniSite that translates test vectors for a device from its DIP package to its PLCC/LCC package, allowing for the different pinouts of the two package types.
<b>Job File</b>	A sequence of keystrokes that have been stored in a disk file and that can be played back at a later time.

<b>LCA</b>	An acronym for Logic Cell Array.
<b>LCC</b>	An acronym for Leadless Chip Carrier. A type of device package. A 4-sided ceramic package with pads on the underside for surface mount applications.
<b>LED</b>	An acronym for Light Emitting Diode. UniSite has five LEDs: four on the top cover and one on the disk drive.
<b>Load Data</b>	A device operation that moves device data into UniSite. You can load UniSite with data from a device, from UniSite's internal disk drive, or from a serial port (for example, from the Remote port).
<b>Load Device</b>	A device operation that copies data from a master device into User memory.
<b>Logic Verification</b>	After programming a device, you can select test vector verification, fuse verification, or both types of verification.
<b>Master Device</b>	A device that contains data you wish to program into another device. For example, you would load data from a master device and then program that data into a blank device.
<b>MatchBook</b>	A new type of socketing technology that makes handling surface-mount devices easier.
<b>Memory Begin Address</b>	The first address, in hex, of the first byte of data to be used in device operations. If the data source/destination is RAM, the memory begin address is a RAM address. If the data source/destination is disk, the memory begin address is the offset for a disk file.
<b>Message Bar</b>	The fourth line of the screen. UniSite displays system and error messages in the message bar. The action symbol is also located in the message bar.
<b>Next Device</b>	Used during serial set programming, this value specifies the next device in the set. For example, if you are using 8-bit devices and have specified a word width of 16 bits, it will require two devices to store each 16-bit word. Depending on the value entered, the data programmed into the next device will come from either even addresses or odd addresses.
<b>Non-default Parameters</b>	Also referred to as the Simple Parameter screen, the Non-default parameters screen displays a selected group of parameters on a parameter entry screen. To display all the available parameters, select the All Parameters screen, which is also referred to as the Complex Parameters screen.
<b>Odd/even Byte Swap</b>	Used during device operations for 16-bit devices, this option swaps the Most Significant Bytes (MSB) and the Least Significant Bytes (LSB) of 16-bit words. UniSite stores RAM data and disk file data with the convention that the LSB of a 16-bit word resides in the even byte of memory.

<b>Online Help</b>	Available throughout UniSite, the help screens provide you with both general help and context-sensitive help. The Help screen is divided into four sections: the key listing, the general help, the specific help, and the reminder bar.
<b>Output Record Size</b>	The number of data bytes contained in each data record during upload.
<b>Overblow</b>	A condition in which fuses are blown that should not have been.
<b>Overblown Fuse</b>	A fuse that has been over-programmed such that the surrounding area may have been damaged or such that fuse material splatter was created. Splatter (or rattlers) can cause intermittent shorting.
<b>PAL</b>	An acronym for Programmable Array Logic. PALs are devices with programmable AND and fixed OR arrays. This is a slightly different architecture from a PROM or an FPLA. Other examples of PAL-type architectures from other manufacturers include PEEL and GAL.
<b>Parallel Test Vector Application</b>	Use of internal registers to hold and release a full set of test vectors (e.g., 20 for a 10-input 10-output device) at once. In contrast to serial application, parallel does not require accommodations for clocking contention, and parallel better matches in-circuit PLD operation and board test suites.
<b>Part Number</b>	The number on the device. For example if you are using an Intel 27C256, then the part number of the device is 27C265.
<b>Pin-driver</b>	The electric circuit reading or applying voltage and current pulses to the individual pin of a device, for programming or testing. See also Universal Pin Driver.
<b>Pinout Code</b>	A 2- or 3-digit hexadecimal number that helps identify a device by its pinout. When combined with the family code, the pinout code identifies the device you are using to UniSite.
<b>PLCC</b>	An acronym for Plastic Leaded Chip Carrier. A device package with J-shaped leads extending from four sides downward, used for surface mount applications.
<b>PLD</b>	An acronym for Programmable Logic Device. A particular type of programmable integrated circuit. Architectures range from being very simple to very complex. Most PLDs contain two levels of logic, an AND array followed by an OR array.
<b>PROM</b>	An acronym for programmable read-only memory. A device with fixed AND and programmable OR arrays. This is a slightly different architecture from an FPLA or a PAL.
<b>Program</b>	The controlled application of electrical pulses to program specific fuses or cells.



<b>Program Device</b>	A device operation that copies device data into a socketed device. The programming is done according to the programming algorithm selected in the select device stage. The programming operation can also include a verify operation.
<b>Program Security Fuse</b>	A programming parameter that enables/disables the programming of the device's security fuse.
<b>Program Signature</b>	Available on only a few devices, the Program Signature is a user-definable field that allows the user to program data into the program signature array. For example, the Program Signature could contain the revision level or modification date of the data in the remainder of the device.
<b>Programmable Integrated Circuit</b>	One of the four basic categories of ASICs: the other three being gate arrays, standard cells and full custom devices. PICs are ICs that are user configurable. PLDs and PGAs are examples of programmable integrated circuits.
<b>Reboot</b>	The process of re-initializing the programmer. After rebooting, the programmer is in the same state as if it had just been turned on.
<b>Registered Devices</b>	Devices that contain registers, rather than being combinatorial only. Registered devices are typically used for sequencers and state machine designs. Typical examples are 16R8, 82S159 and 22V10.
<b>Reject Option</b>	A post-programming device check that pulses the programmed device with voltage to see if the device has programmed per specification. The number of times a device is pulsed varies by manufacturer and by the reject option you select.
<b>Reminder Bar</b>	The bottom line of the screen. The reminder bar tells you what function keys are available and what they will do if pressed.
<b>Remote Mode</b>	UniSite is controlled from a host running a driver program. Device data files can be stored on UniSite's disk and on the host.
<b>Security Fuse</b>	A location in a programmable device that, when programmed, secures the device from readback: the data in the device is unreadable.
<b>Security Fuse Data</b>	The actual data to program into the device's security fuse.
<b>Select Device</b>	A procedure that tells UniSite what device you will be using. You can select a device in one of two ways: by entering the family/pinout code, or by selecting the manufacturer and the device part number.
<b>Self-test</b>	A built-in self-diagnosis command that allows you to test various circuits and subsystems in UniSite, verifying proper operation or isolating possible problem areas.
<b>Serial Set</b>	A method of set programming in which the devices of the set are programmed one at a time instead of all at once.

<b>Serial Test Vector Application</b>	The process of applying test vectors in a serial fashion, one input at a time.
<b>Serial Vector Test</b>	A device test that applies test vector input states serially, starting with pin one and stepping through the remaining pins. This test is a diagnostic tool designed to help debug and classify test vector failures. Specifically, this test is designed to isolate test vectors that are sequence dependent.
<b>Set Programming</b>	A type of programming where a large data file is partitioned and programmed into multiple memory devices.
<b>Simple Parameter Screen</b>	See Non-default parameters.
<b>Source</b>	The place from which something comes. The "something" the source is sending is almost always data. The "where" can be RAM, a disk file, or one of UniSite's serial ports.
<b>Status Window</b>	The top three lines of the screen. The following information is displayed in the status window: the name of the data file, the amount of user RAM, the version numbers of the algorithm/system disk, the device manufacturer and part number, the family/pinout code, and the data translation format.
<b>Structured Test Vectors</b>	A string of test conditions applied to a PLD in a programmer/tester to stimulate inputs and test outputs to ensure functionality. A test vector is one such string, e.g., 20 characters for a 20-pin PLD, with 10 input signals and 10 expected outputs.
<b>Structured Test Vectors (design)</b>	Structured vectors created by the design engineer to confirm that the design is operating as intended. e.g., that a 10-bit counter is counting to 10. Design vectors are used both in preprogramming simulation and in manufacturing.
<b>Structured Test Vectors (device)</b>	Structured vectors created by the design engineer, test engineer or an automatic test vector generation program, which confirm that the device is operating properly after programming, e.g., that nothing can happen in the device to prevent the 10-bit counter from operating correctly. An exhaustive set of device vectors will assure that no undetectable faults may occur.
<b>Sumcheck</b>	A 4- or 8-digit hexadecimal number that, when compared to the original data, allows you to verify that a copy of the data matches the original data. Memory devices have 8-digit sumchecks and logic devices have 4- digit sumchecks. For devices in a set, you can calculate the individual sumcheck of the device and the sumcheck of the entire set.
<b>Terminal Emulator</b>	A program to enable a PC or other computer to act as an ASCII terminal. Allows a PC to be used to communicate with a programmer in terminal mode or with a mainframe.

<b>Terminal Mode</b>	One of UniSite's three operating modes. UniSite is controlled from either a dedicated terminal or from a workstation running a terminal emulation package. Device data files can be stored on UniSite's disk (and on the workstation).
<b>Test Vector</b>	Test vectors functionally test the device, using structured test vectors stored in memory or in a disk file.
<b>Test Vector Stretching</b>	Conversion of DIP test vectors to equivalent PLCC test vectors by adding don't care vector characters into the string to correspond with the PLCC's dead pins.
<b>Total set size</b>	Used during serial set programming, this value specifies how many devices are in a set.
<b>Translate DIP/LCC Vectors</b>	See JEDEC I/O translate DIP/LCC Vectors
<b>Translation Formats</b>	A form of transmission protocol, these formats are used when transferring data between the programmer and a host computer. The different formats represent different ways of encoding the device data in a data file. The data file could contain the fuse pattern for a logic device or the data for a memory device.
<b>Transmit Pacing</b>	The number of milliseconds UniSite will insert as a time-delay between characters transmitted to the host computer during uploading. The time delay is specified in tenths of milliseconds.
<b>Transparent Mode</b>	One of UniSite's three operating modes. UniSite is controlled from either a dedicated terminal or from a workstation running a terminal emulation package. In addition, the Remote port is connected to a host computer or file server. UniSite performs all of its programmer operations, and can act as a transparent link between the terminal/workstation and the host, eliminating the need for a switch box. Thus, you can control both UniSite and the host from the same terminal/workstation. With one exception, all key strokes entered on the terminal will be passed directly to the host. The exception is the Escape command.
<b>Underblow</b>	A condition in which fuses that should have been blown or programmed were not.
<b>Underblown Fuse</b>	A fuse that did not disconnect as per manufacturer's specifications. These fuses may test properly but tend to be more prone to grow back when in circuit, rendering the PLD useless.
<b>Universal PLD Programmer</b>	A programmer that can apply power, ground, and any programming pulse required to program any fuse technology device.
<b>Upload Data</b>	A file transfer operation that involves sending data from the programmer to a host.
<b>Upload Host Command</b>	A command that is sent from UniSite to the host during an upload. The command tells the host what to do with the incoming data.

<b>Upload Wait</b>	The length of time UniSite will wait before it begins sending data to the host computer after the host upload command is sent.
<b>User Data Size</b>	The hexadecimal number of bytes of a data block to use for a device operation. Normally, this value is equal to the device size. During serial set operations, this value works with Total Set Size to determine the total amount of bytes to program into a set of devices.
<b>User memory</b>	The workspace used during device operations. It can be either internal RAM or a disk file. Normally, RAM is used for small, quick device operations, such as programming a single device, while disk is used for larger device operations, such as serial set programming.
<b>User Menu Data</b>	The information you see when you look at UniSite screen. It includes the dialog window, reminder bar, message bar, etc.
<b>User Menu Port</b>	The port the user menu data is sent to. You can re-direct user menu data to either the Terminal port of the Remote port.
<b>User RAM</b>	The RAM in UniSite. User RAM can be used as a source/destination for an operation. Several operations use User RAM as a temporary storage buffer, overwriting any data that may have been there previously.
<b>Universal Pin Driver</b>	A pin driver with the ability to supply power and ground to every pin. With Universal Pin Drivers, you can program and test devices without having to use pin out adapters and characterizers.
<b>Verify Device</b>	A device operation that compares data in a programmed device with data in RAM or in a disk file. With logic devices, verifying can also include functional testing. Verify is an automatic part of the program operation, but additional verify operations can provide useful information about any errors.
<b>Verify Pass</b>	A verify pass is a trip through a device at a specified Vcc to see if the device programmed properly. The pass is usually done once at 5V. The pass can also be done twice, with the first pass at 5.5V and the second pass at 4.5V.
<b>Waveforms</b>	Images of the programming pulses that program a device. Usually created by programmer manufacturers and submitted to device manufacturers as part of the approval process and to record the correct programming spec for a specific device.
<b>Wildcard</b>	Used when entering filenames, a wild card represents one or more characters in a filename. For example, 27*.dat represents both 27512.dat and 27128.dat.
<b>Workstation</b>	A PC, or other micro computer, used for local control of UniSite. You must use terminal emulation software, such as Data I/O's HiTerm, to allow UniSite and the PC (or other micro) to communicate. UniSite is designed to be compatible with all popular design workstations, including both DOS and UNIX-based workstations.

<b>Yield</b>	The percentage of successfully programmed devices.
<b>Yield Tally</b>	The yield tally function keeps track of the programming statistics for the last 16 types of devices programmed. The following statistics are kept for each device type: the manufacturer name and part number, the family/pinout code, the number of devices attempted, the number of devices that programmed successfully, the number of devices that failed non-blank test or illegal bit check, the number of devices that failed to verify, the number of devices that could not be programmed because they contained bits that required more programming pulses than were specified, and, for logic devices only, the number of devices that failed structured vector test.
<b>ZIF Socket</b>	An acronym for Zero Insertion Force. A socket in which the device can be dropped in and engaged via a lever.

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# UniSite<sup>TM</sup>

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Universal Programmer

User Notes – Version 3.8

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# *What's New in Version 3.8*

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The User Notes include the most current information about device support and new features and enhancements to your UniSite. The User Notes are divided into the following sections:

- **Updated Device Support** — Over 130 devices have had their programming algorithms updated since the last release.
- **New Device Support** — Over 220 new devices have been added since the last release.
- **New Features and Enhancements** — A brief description of the changes and additions for this release.
- **Installation Instructions** — Information about installing this new version of software.
- **Updated Manual Pages** — Replacement pages that bring your copy of the *UniSite User Manual* up-to-date. See the section titled "Updating Your Manual" for more information.
- **Device List** — A complete list of all devices supported by UniSite. Device List pages are identified by the prefix DL-. Place the Device List behind the Device List divider tab in your User Manual.

## Updated Device Support

The programming algorithms for the devices listed below have been updated since the last release. The algorithms were updated for one or more of the following reasons:

- A change in the specification issued by the semiconductor company
- An improvement in the programming algorithm to increase programming yields and/or to increase speed

*Note: The asterisk (\*) indicates a device that had its programming algorithms changed because the semiconductor company changed the specification for the device.*

Device Part Number	Pin Count	Package Type	Device Type	Module	
<b>Advanced Micro Devices/MMI</b>					
27C010	32	DIP	EPROM	SetSite	*
27C010	32	DIP	EPROM	Site 40/48	*
27C010	32	LCC	EPROM	ChipSite	*
27C010	32	LCC	EPROM	PinSite	*
27C010	32	PLCC	EPROM	ChipSite	*
27C010	32	PLCC	EPROM	PinSite	*
27C020	32	DIP	EPROM	SetSite	*
27C020	32	DIP	EPROM	Site 40/48	*
27C020	32	LCC	EPROM	ChipSite	*
27C020	32	LCC	EPROM	PinSite	*
27C040	32	DIP	EPROM	SetSite	*
27C040	32	DIP	EPROM	Site 40/48	*
27C100	32	DIP	EPROM	SetSite	*
27C100	32	DIP	EPROM	Site 40/48	*
27C1024	40	DIP	EPROM	SetSite	*
27C1024	40	DIP	EPROM	Site 40/48	*
27C1024	44	LCC	EPROM	ChipSite	*
27C1024	44	LCC	EPROM	PinSite	*
27C1024	44	PLCC	EPROM	ChipSite	*
27C1024	44	PLCC	EPROM	PinSite	*
27C128	28	DIP	EPROM	SetSite	*
27C128	28	DIP	EPROM	Site 40/48	*
27C128	32	LCC	EPROM	ChipSite	*
27C128	32	LCC	EPROM	PinSite	*
27C128	32	PLCC	EPROM	ChipSite	*
27C128	32	PLCC	EPROM	PinSite	*
27C2048	40	DIP	EPROM	SetSite	*
27C2048	40	DIP	EPROM	Site 40/48	*
27C256	28	DIP	EPROM	SetSite	*
27C256	28	DIP	EPROM	Site 40/48	*
27C256	32	LCC	EPROM	ChipSite	*
27C256	32	LCC	EPROM	PinSite	*
27C256	32	PLCC	EPROM	ChipSite	*
27C256	32	PLCC	EPROM	PinSite	*
27C512	28	DIP	EPROM	SetSite	*
27C512	28	DIP	EPROM	Site 40/48	*

\* Indicates a device that had its programming algorithms changed because the semiconductor company changed the specification for the device.

27C512	32	LCC	EPROM	ChipSite	*
27C512	32	LCC	EPROM	PinSite	*
27C512	32	PLCC	EPROM	ChipSite	*
27C512	32	PLCC	EPROM	PinSite	*
27C64	28	DIP	EPROM	SetSite	*
27C64	28	DIP	EPROM	Site 40/48	*
27C64	32	LCC	EPROM	ChipSite	*
27C64	32	LCC	EPROM	PinSite	*
27C64	32	PLCC	EPROM	ChipSite	*
27C64	32	PLCC	EPROM	PinSite	*
27H010	32	DIP	EPROM	SetSite	*
27H010	32	DIP	EPROM	Site 40/48	*
27H256	28	DIP	EPROM	Site 40/48	*
28F010	32	DIP	FLASH	Site 40/48	
28F010	32	LCC	FLASH	ChipSite	
28F010	32	LCC	FLASH	PinSite	
28F010	32	PLCC	FLASH	ChipSite	
28F010	32	PLCC	FLASH	PinSite	
28F020	32	DIP	FLASH	Site 40/48	*
28F020	32	PLCC	FLASH	ChipSite	*
28F020	32	PLCC	FLASH	PinSite	*
28F512	32	DIP	FLASH	Site 40/48	*
28F512	32	PLCC	FLASH	ChipSite	*
28F512	32	PLCC	FLASH	PinSite	*
28F512-P1	32	LCC	FLASH	ChipSite	*
28F512-P1	32	LCC	FLASH	PinSite	*
87C51	40	DIP	MICRO	Site 40/48	*
87C51	44	LCC	MICRO	ChipSite	*
87C51	44	LCC	MICRO	PinSite	*
87C51	44	PLCC	MICRO	ChipSite	*
87C51	44	PLCC	MICRO	PinSite	*
87C521	40	DIP	MICRO	Site 40/48	*
87C521	44	LCC	MICRO	ChipSite	*
87C521	44	LCC	MICRO	PinSite	*
CE20RA10H-15/4	24	DIP	PAL	Site 40/48	
CE20RA10H-15/4	28	PLCC	PAL	ChipSite	
CE20RA10H-15/4	28	PLCC	PAL	PinSite	
CE22V10	24	DIP	PAL	Site 40/48	
CE22V10H-25	24	SO	PAL	ChipSite	
CE22V10H-25	24	SO	PAL	PinSite	
CE22V10H-25	28	PLCC	PAL	ChipSite	
CE22V10H-25	28	PLCC	PAL	PinSite	
CE26V12H/4	28	DIP	EEPLD	Site 48	*

**Altera Corporation**

310	20	DIP	EPLD	Site 48	
5016	20	DIP	EPLD	Site 48	
5128	68	JLCC	MAX	PinSite	*
5128	68	PGA	MAX	PinSite	*
5128	68	PLCC	MAX	PinSite	*

**Cypress Semiconductor, Inc.**

7C342	68	JLCC	EPLD	PinSite	*
7C342	68	PGA	EPLD	PinSite	*
7C342	68	PLCC	EPLD	PinSite	*
7C342	68	QFP	EPLD	PinSite	*

\* Indicates a device that had its programming algorithms changed because the semiconductor company changed the specification for the device.



**Intel Corporation**

28F010-P1	32	DIP	FLASH	Site 40/48
28F010-P1	32	PLCC	FLASH	ChipSite
28F010-P1	32	PLCC	FLASH	PinSite
28F020	32	DIP	FLASH	Site 40/48
28F020	32	PLCC	FLASH	ChipSite
28F020	32	PLCC	FLASH	PinSite
28F256A	32	DIP	FLASH	Site 40/48
28F256A	32	PLCC	FLASH	ChipSite
28F256A	32	PLCC	FLASH	PinSite
28F512	32	DIP	FLASH	Site 40/48
28F512	32	PLCC	FLASH	ChipSite
28F512	32	PLCC	FLASH	PinSite
5AC324	40	DIP	EPLD	Site 48
85C060	24	DIP	MPLD	Site 40/48
85C060	28	PLCC	MPLD	ChipSite
85C060	28	PLCC	MPLD	PinSite
8797BH	68	LCC	MICRO	ChipSite
8797BH	68	LCC	MICRO	PinSite
8797BH	68	PGA	MICRO	PinSite
87C58	40	DIP	MICRO	Site 40/48
87C58	44	LCC	MICRO	PinSite
87C58	44	PLCC	MICRO	PinSite

**Lattice Semiconductor**

6001	24	DIP	GAL	Site 40/48	*
6001	28	PLCC	GAL	PinSite	*
ispLSI1032	84	PLCC	ISPGAL	PinSite	*
ispLSI1032	84	PLCC	ISPGAL	Site 40/48	*
pLSI1032	84	PLCC	PLSI	PinSite	*
pLSI1032	84	PLCC	PLSI	Site 40/48	*

**Mitsubishi Electronics of America**

2732	24	DIP	EPROM	SetSite ?
2732	24	DIP	EPROM	Site 40/48
28F101	32	DIP	FLASH	Site 40/48

**Signetics Corporation**

87C51	40	DIP	MICRO	Site 40/48	
87C51	44	JLCC	MICRO	ChipSite	
87C51	44	JLCC	MICRO	PinSite	
87C51	44	LCC	MICRO	ChipSite	
87C51	44	LCC	MICRO	PinSite	
87C51	44	PLCC	MICRO	ChipSite	
87C51	44	PLCC	MICRO	PinSite	
PLUS16L8	20	DIP	PAL	Site 40/48	*
PLUS16L8	20	PLCC	PAL	ChipSite	*
PLUS16L8	20	PLCC	PAL	PinSite	*
PLUS16R4	20	DIP	PAL	Site 40/48	*
PLUS16R4	20	PLCC	PAL	ChipSite	*
PLUS16R4	20	PLCC	PAL	PinSite	*
PLUS16R6	20	DIP	PAL	Site 40/48	*
PLUS16R6	20	PLCC	PAL	ChipSite	*

\* Indicates a device that had its programming algorithms changed because the semiconductor company changed the specification for the device.

PLUS16R6	20	PLCC	PAL	PinSite	*
PLUS16R8	20	DIP	PAL	Site 40/48	*
PLUS16R8	20	PLCC	PAL	ChipSite	*
PLUS16R8	20	PLCC	PAL	PinSite	*

**Texas Instruments**

16L8-5	20	DIP	BPAL	Site 48	*
16L8-5	20	LCC	BPAL	ChipSite	*
16L8-5	20	LCC	BPAL	PinSite	*
16L8-5	20	PLCC	BPAL	ChipSite	*
16L8-5	20	PLCC	BPAL	PinSite	*
16L8-7	20	DIP	BPAL	Site 40/48	*
16L8-7	20	PLCC	BPAL	ChipSite	*
16L8-7	20	PLCC	BPAL	PinSite	*
16R4-5	20	DIP	BPAL	Site 40/48	*
16R4-5	20	LCC	BPAL	ChipSite	*
16R4-5	20	LCC	BPAL	PinSite	*
16R4-5	20	PLCC	BPAL	ChipSite	*
16R4-5	20	PLCC	BPAL	PinSite	*
16R4-7	20	DIP	BPAL	Site 40/48	*
16R4-7	20	PLCC	BPAL	ChipSite	*
16R4-7	20	PLCC	BPAL	PinSite	*
16R6-5	20	DIP	BPAL	Site 40/48	*
16R6-5	20	LCC	BPAL	ChipSite	*
16R6-5	20	LCC	BPAL	PinSite	*
16R6-7	20	DIP	BPAL	Site 40/48	*
16R6-7	20	PLCC	BPAL	ChipSite	*
16R6-7	20	PLCC	BPAL	PinSite	*
16R8-5	20	DIP	BPAL	Site 40/48	*
16R8-5	20	LCC	BPAL	ChipSite	*
16R8-5	20	LCC	BPAL	PinSite	*
16R8-5	20	PLCC	BPAL	ChipSite	*
16R8-5	20	PLCC	BPAL	PinSite	*
16R8-7	20	DIP	BPAL	Site 40/48	*
16R8-7	20	PLCC	BPAL	ChipSite	*
16R8-7	20	PLCC	BPAL	PinSite	*
20L8-10	24	DIP	BPAL	Site 40/48	*
20L8-10	28	PLCC	BPAL	ChipSite	*
20L8-10	28	PLCC	BPAL	PinSite	*
20L8-5	24	DIP	BPAL	Site 40/48	*
20L8-5	28	LCC	BPAL	ChipSite	*
20L8-5	28	LCC	BPAL	PinSite	*
20L8-5	28	PLCC	BPAL	ChipSite	*
20L8-5	28	PLCC	BPAL	PinSite	*
20L8-7	24	DIP	BPAL	Site 40/48	*
20L8-7	28	PLCC	BPAL	ChipSite	*
20L8-7	28	PLCC	BPAL	PinSite	*
20R4-10	24	DIP	BPAL	Site 40/48	*
20R4-10	28	PLCC	BPAL	ChipSite	*
20R4-10	28	PLCC	BPAL	PinSite	*
20R4-5	24	DIP	BPAL	Site 40/48	*
20R4-5	28	LCC	BPAL	ChipSite	*
20R4-5	28	LCC	BPAL	PinSite	*
20R4-5	28	PLCC	BPAL	ChipSite	*
20R4-5	28	PLCC	BPAL	PinSite	*
20R4-7	24	DIP	BPAL	Site 40/48	*
20R4-7	28	PLCC	BPAL	ChipSite	*
20R4-7	28	PLCC	BPAL	PinSite	*
20R6-10	24	DIP	BPAL	Site 40/48	*
20R6-10	28	PLCC	BPAL	ChipSite	*
20R6-10	28	PLCC	BPAL	PinSite	*

20R6-5	24	DIP	BPAL	Site 40/48	*
20R6-5	28	LCC	BPAL	ChipSite	*
20R6-5	28	LCC	BPAL	PinSite	*
20R6-5	28	PLCC	BPAL	ChipSite	*
20R6-5	28	PLCC	BPAL	PinSite	*
20R6-7	24	DIP	BPAL	Site 40/48	*
20R6-7	28	PLCC	BPAL	ChipSite	*
20R6-7	28	PLCC	BPAL	PinSite	*
20R8-10	24	DIP	BPAL	Site 40/48	*
20R8-10	28	PLCC	BPAL	ChipSite	*
20R8-10	28	PLCC	BPAL	PinSite	*
20R8-5	24	DIP	BPAL	Site 40/48	*
20R8-5	28	LCC	BPAL	ChipSite	*
20R8-5	28	LCC	BPAL	PinSite	*
20R8-5	28	PLCC	BPAL	ChipSite	*
20R8-5	28	PLCC	BPAL	PinSite	*
20R8-7	24	DIP	BPAL	Site 40/48	*
20R8-7	28	PLCC	BPAL	ChipSite	*
20R8-7	28	PLCC	BPAL	PinSite	*

#### **Toshiba America**

97208	32	DIP	EEPROM	Site 40/48	*
97208A	32	DIP	FLASH	Site 40/48	*

#### **Waferscale Integration, Inc.**

57C43C	24	DIP	RPPROM	Site 40/48	*
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## New Device Support

The following devices have been added to UniSite since the last release:

Device Part Number	Pin Count	Package Type	Device Type	Module
<b>Advanced Micro Devices/MMI</b>				
110	44	LCC	MACH	ChipSite
110	44	LCC	MACH	PinSite
220	68	PLCC	MACH	PinSite
27C2048	44	LCC	EPROM	ChipSite
27C2048	44	LCC	EPROM	PinSite
27C2048	44	PLCC	EPROM	ChipSite
27C2048	44	PLCC	EPROM	PinSite
28F256	32	DIP	FLASH	Site 40/48
28F256	32	PLCC	FLASH	ChipSite
28F256	32	PLCC	FLASH	PinSite
CE16V8-7/5	20	DIP	PAL	Site 40/48
CE16V8-7/5	20	PLCC	PAL	ChipSite
CE16V8-7/5	20	PLCC	PAL	PinSite
CE16V8H-15	20	DIP	PAL	Site 40/48
CE16V8H-15	20	PLCC	PAL	ChipSite
CE16V8H-15	20	PLCC	PAL	PinSite
CE16V8H-15/4	20	DIP	PAL	Site 40/48
CE16V8H-15/4	20	PLCC	PAL	ChipSite
CE16V8H-15/4	20	PLCC	PAL	PinSite
CE16V8H-25	20	DIP	PAL	Site 40/48
CE16V8H-25	20	PLCC	PAL	ChipSite
CE16V8H-25	20	PLCC	PAL	PinSite
CE16V8Q-10/4	20	DIP	PAL	Site 40/48
CE16V8Q-10/4	20	PLCC	PAL	ChipSite
CE16V8Q-10/4	20	PLCC	PAL	PinSite
CE16V8Q-15	20	DIP	PAL	Site 40/48
CE16V8Q-15	20	PLCC	PAL	ChipSite
CE16V8Q-15	20	PLCC	PAL	PinSite
CE16V8Q-15/4	20	DIP	PAL	Site 40/48
CE16V8Q-15/4	20	PLCC	PAL	ChipSite
CE16V8Q-15/4	20	PLCC	PAL	PinSite
CE16V8Q-25	20	DIP	PAL	Site 40/48
CE16V8Q-25	20	PLCC	PAL	ChipSite
CE16V8Q-25	20	PLCC	PAL	PinSite
CE16V8Q-25/4	20	DIP	PAL	Site 40/48
CE16V8Q-25/4	20	PLCC	PAL	ChipSite
CE16V8Q-25/4	20	PLCC	PAL	PinSite
CE20RA10H-25/4	24	DIP	PAL	Site 40/48
CE20RA10H-25/4	28	PLCC	PAL	ChipSite
CE20RA10H-25/4	28	PLCC	PAL	PinSite
CE20RA10Q-15/4	24	DIP	PAL	Site 40/48
CE20RA10Q-15/4	28	PLCC	PAL	ChipSite
CE20RA10Q-15/4	28	PLCC	PAL	PinSite
CE20RA10Q-25/4	24	DIP	PAL	Site 40/48
CE20RA10Q-25/4	28	PLCC	PAL	ChipSite
CE20RA10Q-25/4	28	PLCC	PAL	PinSite
CE20V8H-15	24	DIP	EEPLD	Site 40/48
CE20V8H-15	28	PLCC	EEPLD	ChipSite
CE20V8H-15	28	PLCC	EEPLD	PinSite
CE20V8H-25	24	DIP	EEPLD	Site 40/48
CE20V8H-25	28	PLCC	EEPLD	ChipSite
CE20V8H-25	28	PLCC	EEPLD	PinSite

CE20V8H-25/4	24	DIP	EEPLD	Site 40/48
CE20V8H-25/4	28	PLCC	EEPLD	ChipSite
CE20V8H-25/4	28	PLCC	EEPLD	PinSite
CE20V8Q-15	24	DIP	EEPLD	Site 40/48
CE20V8Q-15	28	PLCC	EEPLD	ChipSite
CE20V8Q-15	28	PLCC	EEPLD	PinSite
CE20V8Q-15/4	24	DIP	EEPLD	Site 40/48
CE20V8Q-15/4	28	PLCC	EEPLD	ChipSite
CE20V8Q-15/4	28	PLCC	EEPLD	PinSite
CE20V8Q-25	24	DIP	EEPLD	Site 40/48
CE20V8Q-25	28	PLCC	EEPLD	ChipSite
CE20V8Q-25	28	PLCC	EEPLD	PinSite
CE20V8Q-25/4	24	DIP	EEPLD	Site 40/48
CE20V8Q-25/4	28	PLCC	EEPLD	ChipSite
CE20V8Q-25/4	28	PLCC	EEPLD	PinSite
CE22V10H-10/5	24	DIP	PAL	Site 40/48
CE22V10H-10/5	28	PLCC	PAL	ChipSite
CE22V10H-10/5	28	PLCC	PAL	PinSite
CE22V10H-15	24	DIP	PAL	Site 40/48
CE22V10H-15	28	PLCC	PAL	ChipSite
CE22V10H-15	28	PLCC	PAL	PinSite
CE22V10H-15/4	24	DIP	PAL	Site 40/48
CE22V10H-15/4	28	PLCC	PAL	ChipSite
CE22V10H-15/4	28	PLCC	PAL	PinSite
CE22V10H-25/4	24	DIP	PAL	Site 40/48
CE22V10H-25/4	28	PLCC	PAL	ChipSite
CE22V10H-25/4	28	PLCC	PAL	PinSite
CE22V10Q-25	24	DIP	PAL	Site 40/48
CE22V10Q-25	28	PLCC	PAL	ChipSite
CE22V10Q-25	28	PLCC	PAL	PinSite
CE22V10Q-25/4	24	DIP	PAL	Site 40/48
CE22V10Q-25/4	28	PLCC	PAL	ChipSite
CE22V10Q-25/4	28	PLCC	PAL	PinSite
CE26V12H/4	28	PLCC	EEPLD	PinSite

**Altera Corporation**

5130	84	JLCC	MAX	PinSite
5192	84	JLCC	EPLD	PinSite

**Atmel Corporation**

22V10	28	LCC	EPLD	ChipSite
22V10	28	LCC	EPLD	PinSite
27C040	32	DIP	EPROM	SetSite
27C040	32	DIP	EPROM	Site 40/48
28C010	44	LCC	EEPROM	ChipSite
28C010	44	LCC	EEPROM	PinSite
5000	68	PGA	EPLD	PinSite
750	28	LCC	EPLD	ChipSite
750	28	LCC	EPLD	PinSite
ATH3000	68	JLCC	EPLD	PinSite
ATH3000	68	PLCC	N/A	PinSite

**Catalyst Semiconductor**

24C02	8	DIP	EEPROM	Site 40/48
24C04	8	DIP	N/A	Site 40/48
24C16	8	DIP	N/A	Site 40/48
27C210	44	PLCC	EPROM	ChipSite
27C210	44	PLCC	EPROM	PinSite

28C256	32	PLCC	EEPROM	ChipSite
28C256	32	PLCC	EEPROM	PinSite
28F010	32	DIP	FLASH	Site 40/48
28F010	32	PLCC	FLASH	ChipSite
28F010	32	PLCC	FLASH	PinSite

**Cypress Semiconductor, Inc.**

16L8-5	20	DIP	EPLD	Site 40/48
16L8-7	20	DIP	EPLD	Site 40/48
16R4-5	20	DIP	EPLD	Site 40/48
16R4-7	20	DIP	EPLD	Site 40/48
16R6-5	20	DIP	EPLD	Site 40/48
16R6-7	20	DIP	EPLD	Site 40/48
16R8-5	20	DIP	EPLD	Site 40/48
16R8-7	20	DIP	EPLD	Site 40/48
20G10C	24	DIP	PAL	Site 40/48
610	24	DIP	EPLD	Site 40/48
7B333	28	DIP	EPLD	Site 48
7B336	28	DIP	PAL	Site 48
7B336	28	PLCC	PAL	PinSite
7B337	28	DIP	PAL	Site 48
7C344	28	JLCC	EPLD	PinSite

**Fujitsu Microelectronics, Inc.**

27C1000	32	JLCC	EPROM	ChipSite
27C1000	32	JLCC	EPROM	PinSite
27C1000A	32	DIP	EPROM	Site 40/48
27C1001A	32	DIP	EPROM	Site 40/48
27C1024	44	PLCC	EPROM	ChipSite
27C1024	44	PLCC	EPROM	PinSite
27C1024A	40	DIP	EPROM	Site 40/48
27C2000	32	DIP	EPROM	Site 40/48
27C2001	32	DIP	EPROM	Site 40/48
27C2048	40	DIP	EPROM	Site 40/48
27C512HW	28	DIP	EPROM	Site 40/48

**Harris Corporation**

6642/883	28	LCC	PROM	PinSite
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**Intel Corporation**

16V8	20	DIP	XPLD	Site 40/48
16V8	20	PLCC	XPLD	ChipSite
16V8	20	PLCC	XPLD	PinSite
20V8	24	DIP	XPLD	Site 40/48
20V8	28	PLCC	XPLD	ChipSite
20V8	28	PLCC	XPLD	PinSite
28F001BX-B	32	TSOP	FLASH	PinSite
28F001BX-T	32	TSOP	FLASH	PinSite
28F008-R	40	TSOP	FLASH	PinSite
28F008-S	40	TSOP	FLASH	PinSite
28F010	32	TSOP	FLASH	PinSite
28F010-R	32	TSOP	FLASH	PinSite
28F020	32	TSOP	FLASH	PinSite
28F020-R	32	TSOP	FLASH	PinSite
87C196KC	80	QFP	MICRO	PinSite
87C196KD	68	JLCC	MICRO	ChipSite
87C196KD	68	JLCC	MICRO	PinSite
87C196KD	80	QFP	MICRO	PinSite
87C51(FX)	44	QFP	MICRO	PinSite

87C51FA(FX)	44	QFP	MICRO	PinSite
87C51FB	44	QFP	MICRO	PinSite
87C51FC	44	QFP	MICRO	PinSite
87C54	44	QFP	MICRO	PinSite
87C58	44	QFP	MICRO	PinSite
IPLD22V10	24	DIP	EPLD	Site 40/48
IPLD22V10	28	PLCC	EPLD	ChipSite
IPLD22V10	28	PLCC	EPLD	PinSite
IPLD610	24	DIP	EPLD	Site 40/48
IPLD610	28	PLCC	EPLD	ChipSite
IPLD610	28	PLCC	EPLD	PinSite
IPLD910	40	DIP	EPLD	Site 40/48
IPLD910	44	PLCC	EPLD	ChipSite
IPLD910	44	PLCC	EPLD	PinSite

**Lattice Semiconductor**

16VP8B	20	DIP	GAL	Site 48
20VP8B	24	DIP	GAL	Site 40/48
6001B	24	DIP	GAL	Site 40/48
6001B	28	PLCC	GAL	PinSite
6002B	24	DIP	GAL	Site 40/48
6002B	28	PLCC	GAL	PinSite
ispLSI1016	44	PLCC	ISPGAL	PinSite
ispLSI1016	44	PLCC	ISPGAL	Site 40/48
ispLSI1024	68	PLCC	ISPGAL	ChipSite
ispLSI1024	68	PLCC	ISPGAL	PinSite
ispLSI1024	68	PLCC	ISPGAL	Site 40/48
ispLSI1048	120	QFP	ISPGAL	Site 40/48
pLSI1016	44	PLCC	PLSI	PinSite
pLSI1016	44	PLCC	PLSI	Site 40/48
pLSI1024	68	PLCC	PLSI	PinSite
pLSI1024	68	PLCC	PLSI	Site 40/48
pLSI1048	120	PLCC	PLSI	Site 40/48

**Macronix Inc.**

27C256	28	DIP	EPROM	SetSite
27C256	28	DIP	EPROM	Site 40/48

**Mitsubishi Electronics of America**

27401A	32	DIP	EPROM	Site 40/48
27C401	32	DIP	EPROM	SetSite
28F102	40	DIP	FLASH	Site 40/48
37702E2	80	LCC	MICRO	Site 40/48
37702E4	80	LCC	MICRO	Site 40/48
81M1-G1	68	CARD	FLASH	Site 40/48
8513-G1	68	CARD	FLASH	Site 40/48

**Motorola Inc.**

68HC711K4	84	JLCC	MICRO	PinSite
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**NEC Electronics Corp.**

28C64A	28	DIP	EEPROM	Site 40/48
75P308	80	QFP	MICRO	PinSite
75P316	80	QFP	MICRO	PinSite
75P402	28	DIP	MICRO	Site 40/48
78P312A	64	QFP	MICRO	Site 40/48
78P312A	64	QUIP	MICRO	Site 40/48
78P312A	64	SDIP	MICRO	Site 40/48
78P312A	68	PLCC	MICRO	Site 40/48

78P322	68	LCC	MICRO	Site 40/48
78P322	68	PLCC	MICRO	Site 40/48
78P322	74	LCC	MICRO	Site 40/48
78P322	74	QFP	MICRO	Site 40/48
78P322	80	QFP	MICRO	Site 40/48
78P324	68	LCC	MICRO	Site 40/48
78P324	68	PLCC	MICRO	Site 40/48
78P324	74	LCC	MICRO	Site 40/48
78P324	74	QFP	MICRO	Site 40/48
78P328	64	QFP	MICRO	Site 40/48
78P328	64	SDIP	MICRO	Site 40/48
78P334	84	LCC	MICRO	Site 40/48
78P334	84	PLCC	MICRO	Site 40/48
78P334	94	QFP	MICRO	Site 40/48

**National Semiconductor Corp.**

COP8742C	20	DIP	MICRO	Site 48
COP8780C	40	DIP	MICRO	Site 48
COP8780C	44	JLCC	MICRO	PinSite
COP8780C	44	PLCC	MICRO	PinSite
COP8781C	28	DIP	MICRO	Site 48
HPC467064	68	JLCC	MICRO	PinSite
MAPL144	44	PLCC	MAPL	PinSite

**Ricoh Corporation**

16P8F	20	DIP	EPLD	Site 40/48
16RP4F	20	DIP	EPLD	Site 40/48
16RP6F	20	DIP	EPLD	Site 40/48
16RP8F	20	DIP	EPLD	Site 40/48
242	24	DIP	EPLD	Site 40/48

**SEEQ Technology, Inc.**

28C256	32	PLCC	EEPROM	ChipSite
28C256	32	PLCC	EEPROM	PinSite
28C256A	32	PLCC	EEPROM	ChipSite
28C256A	32	PLCC	EEPROM	PinSite

**SGS-Thomson Microelectronics**

27C1024	44	PLCC	EPROM	ChipSite
27C1024	44	PLCC	EPROM	PinSite
27C516	40	DIP	EPROM	SetSite
27C516	40	DIP	EPROM	Site 40/48
27C516	44	PLCC	EPROM	ChipSite
27C516	44	PLCC	EPROM	PinSite

**Samsung Semiconductor, Inc.**

28C256	32	PLCC	EEPROM	ChipSite
28C256	32	PLCC	EEPROM	PinSite

**Seiko Epson**

BWB513 XO	68	CARD	EPROM	Site 40/48
HWB513 XO	68	CARD	EPROM	Site 40/48



**Seiko Instruments Inc.**

22H12R/I	18	DIP	NOVRAM	Site 48
22S12R/I	18	DIP	NOVRAM	Site 48
24H45R/I	8	DIP	NOVRAM	Site 40/48
24S45R/I	8	DIP	NOVRAM	Site 40/48
2914AR/I	8	DIP	EEPROM	Site 40/48
2922AR/I	8	DIP	EEPROM	Site 40/48
2934AR/I	8	DIP	EEPROM	Site 40/48

**Sharp Corporation**

57257J-12	28	DIP	EPROM	SetSite
57257J-12	28	DIP	EPROM	Site 40/48

**Signetics Corporation**

87C51FB	40	DIP	MICRO	Site 40/48
87C524	40	DIP	MICRO	Site 40/48
87C592	68	JLCC	MICRO	ChipSite
87C592	68	JLCC	MICRO	PinSite
87C592	68	LCC	MICRO	ChipSite
87C592	68	LCC	MICRO	PinSite
87C592	68	PLCC	MICRO	ChipSite
87C592	68	PLCC	MICRO	PinSite
PML2852	84	JLCC	PML	Site 40/48
PML2852	84	PLCC	PML	Site 40/48

**Texas Instruments**

28F010	32	DIP	FLASH	Site 40/48
320E14	68	PLCC	MICRO	PinSite
320E17	44	PLCC	MICRO	PinSite
320E25	68	PLCC	MICRO	PinSite

**Toshiba America**

5716200D-150/200	42	DIP	EPROM	Site 48
578200D-150	42	DIP	EPROM	Site 48
578200D-200	42	DIP	EPROM	Site 48

**Waferscale Integration, Inc.**

57C128F	32	JLCC	EPROM	ChipSite
57C128F	32	JLCC	EPROM	PinSite
57C43C	28	PLCC	RPPROM	ChipSite
57C43C	28	PLCC	RPPROM	PinSite
57C49C	28	PLCC	RPPROM	ChipSite
57C49C	28	PLCC	RPPROM	PinSite
57C51C	32	JLCC	EPROM	ChipSite
57C51C	32	JLCC	EPROM	PinSite
57C51C	32	PLCC	EPROM	ChipSite
57C51C	32	PLCC	EPROM	PinSite
PSD301	44	JLCC	PSD	PinSite
PSD302	44	PLCC	PSD	ChipSite
PSD302	44	PLCC	PSD	PinSite
PSD303	44	JLCC	PSD	ChipSite
PSD303	44	JLCC	PSD	PinSite
PSD311	44	JLCC	PSD	ChipSite
PSD311	44	JLCC	PSD	PinSite
PSD312	44	JLCC	PSD	ChipSite
PSD312	44	JLCC	PSD	PinSite
PSD313	44	JLCC	PSD	ChipSite
PSD313	44	JLCC	PSD	PinSite

**Xicor, Inc.**

24C02	8	DIP	EEPROM	Site 40/48
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**Zilog**

86E21	44	PLCC	MICRO	ChipSite
86E21	44	PLCC	MICRO	PinSite

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## New Features and Enhancements

In addition to the updated algorithms and new device support, Version 3.8 also adds these new features:

- Added software support for the Keep Current Express Subscription Service. The Express service allows you to obtain the latest device algorithms for your UniSite by downloading the new/updated algorithms from Data I/O's Keep Current bulletin board system. For a brief description of the Express service, see the Options section of Chapter 1. For more detailed description of the Express service, see the Keep Current Express documentation located behind the Keep Current tab in the *UniSite User Manual*.
- Added the Keep Current Configuration menu in Terminal mode. The functions in this menu include View, Replace/Restore, Delete, and Purge. For more information, see the description of Keep Current in Chapter 5, "Commands."
- Added `xxx...xxx3E]` CRC command. This command loads the Keep Current algorithm from the specified Keep Current (.KCx) filename. With this command, Keep Current algorithms with different revision numbers may be selected for the same device. For more information, see the description of the `xxx...xxx3E]` in Chapter 6, "Computer Remote Control."
- Added a new translation format, Absolute Binary format (Code 16). Absolute binary format is a literal representation of the data to be transferred and no translation of the data takes place during the transfer. For more information, see the description of the Absolute Binary format in Chapter 7, "Translation Formats."

---

## Installing Your New Software

If you have a new version of system software to install, or if you have a new device library to install, refer to pages 5-43 through 5-45 of the *UniSite User Manual* for instructions.

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## Updating Your Manual

The most current manual pages for Version 3.8 contain the May 1992 printing date at the bottom of the page. Please update your manual with the new pages.

Following are brief descriptions of the changes affecting each replacement page:

- 1-5 to 1-6 – UniSite is now certified by CSA to comply with CSA C22.2 No. 231, and by TUV to comply with VDE 0411, IEC 348 and IEC 1010-1.
- 5-1 to 5-2 – Added Keep Current Configuration menu to Figure 5-1, "The Command Tree."
- 5-27 to 5-28 – Updated the description of Configuration System to include Keep Current functions.
- 5-43 to 5-46 – Added the descriptions for the Keep Current Configuration functions.
- 5-67 to 5-68 – The use of wildcards is not supported by the Rename function; removed the note referring to wildcards. Also added a more detailed description of how to use wildcards with the Copy function.
- 6-9 to 6-10 – Updated the Summary of Extended CRC Commands to include the `xxx...xxx3E]` command.
- 6-21 to 6-22 – Added the `xxx...xxx3E]` command.
- 6-35 to 6-36 – Added the AE CRC error code.
- 7-9 to 7-14B – Added Absolute Binary format, code 16. Changed the name of translation format code 10 to Formatted Binary format.
- 8-11 to 8-12 – Added a description for the Using Keep Current Algorithm message.

**UniSite<sup>TM</sup>**

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Universal Programmer

Replacement Pages – Version 3.8

**DATA I/O**



## Specifications

### Functional

RAM	1MB standard (up to 8MB optional)
Disk Format	Double-sided, double-density 3.5-inch disk with 135 tracks per inch. 720KB formatted.
Controller	Motorola 68000 16-bit microprocessor
Terminal Support	Interfaces with ANSI 3.64 compatible terminals, IBM PCs and compatibles running a terminal emulator program, and many popular ASCII terminals.
Communication Standard	RS-232C
Data transfer rate	110 to 19.2K baud (up to 115.2K baud using HiTerm)

### Power Requirements

Operating Voltages	100 to 120 Vac $\pm 10\%$ or 220 - 240 Vac $\pm 10\%$
Frequency Range	48 to 63 Hz
Power Consumption	500 VA maximum
Fuse Ratings	250V/6A/F (Fast Blow)

### Physical and Environmental

Dimensions	18.06h x 43.48w x 36.20d cm 7.11h x 17.12 w x 14.25d inches
Weight	9.1 kg (20 lb.)
Shipping Weight	11.4 kg (25 lb.)
Temperature	Operating: +10° to +40°C (+50° to +105°F) Storage: +4° to +50°C (+40° to +122°F) Transportation: -40° to +55°C (-40° to +130°F)
Relative Humidity	Operating: 20 to 80% noncondensing Storage: 10 to 90% noncondensing
Altitude	Operating: To 5,000 meters Storage: To 15,000 meters

### Safety

UniSite is designed to comply with the following safety standards:

Underwriters Laboratories — UL 1244

Canadian Standards Association — CSA C22.2 NO. 231\*

International Electrotechnical Commission — IEC 348 and IEC 1010-1\*\*

Verband Deutscher Electrotechniker — VDE 0411\*\*

\* Canadian Standards Association (CSA) certifies UniSits to comply with CSA C22.2 No. 231.

\*\* Technischer Überwachungs-Verein (TUV) certifies UniSite to comply with VDE 0411, IEC 348 and IEC 1010-1.

**Electromagnetic Emissions**

UniSite is certified to meet VDE 0871 Limit B.

**Electrostatic Discharge (ESD)**

IEC 801-2 ( $\pm 15$  kV)

**Calibration**

UniSite is a state-of-the-art self-calibrating precision instrument. All calibration is performed by software and is compared to a laser trimmed voltage reference. See the *UniSite Maintenance Manual* for information on checking the reference voltage and the master clock.

UniSite calibrates itself every time it is powered up and every time a complete Self-test cycle is run. To ensure that your UniSite remains fully calibrated, Data I/O recommends that you cycle power or run a complete Self-test cycle at least every three months.

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## Available Options

The items listed below are designed to complement the UniSite Universal Programmer. For more information, or to order an item below, contact Data I/O Customer Support as listed in the Preface.

**Keep Current Subscription Service**

Data I/O offers a one-year subscription to keep your programmer and documentation up-to-date with the latest features and device support. This subscription also incorporates manufacturer-recommended changes to existing device support to maintain optimum yields, throughput, and long-term reliability.

**Keep Current Express Subscription Service**

The Express option gives you immediate access to new and updated programming algorithms via our Keep Current BBS—up to three months before the algorithms are available in a quarterly update kit. The new Express option, available to Keep Current members on a yearly basis, allows unlimited access to all new algorithms. For more information, see the Keep Current Express documentation located behind the Keep Current tab, or contact Data I/O Customer Support.

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*Note: The Express option may not yet be available in all areas. Contact Data I/O Customer Support for more information.*

**RAM Upgrades**

Expands system RAM. Contact Data I/O Customer Support for more information on RAM upgrades.

**PinSite**

Expands device support to include several different package types, including PGA, PLCC, LCC, and SOIC. With the additional pin drivers located onboard PinSite, UniSite can support devices up to 84 pins. Uses MatchBook™ Device Carriers to improve throughput and reduce damage that may be caused by traditional sockets for surface-mount devices.

# 5 *Commands*

---

This chapter describes the commands you can access from UniSite's menus.

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## Menu Organization

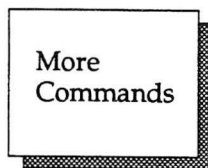
The interrelation of UniSite menus and commands is shown in the command tree in Figure 5-1.

### Menu Maps

Each command description includes a map, part of the command tree representing your location and showing you the path to the command.

The maps, read from left to right, are comprised of three or four boxes, each representing a screen type, as described below.

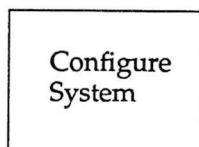
#### Shaded Box



#### Main Menu Screen

A shaded box represents a top-level command, either a Main Menu command or the More Commands menu. These are the most frequently used commands. The shaded box is the start of your path to a particular command.

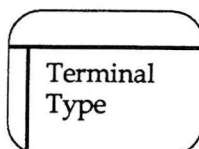
#### Box



#### Other Menu Screens

The next step on the path to a command is a box, representing all other menu screens, most of which are accessible from the More Commands screen. When you select an item in a box, a T-box item or another screen is displayed.

#### T-Box



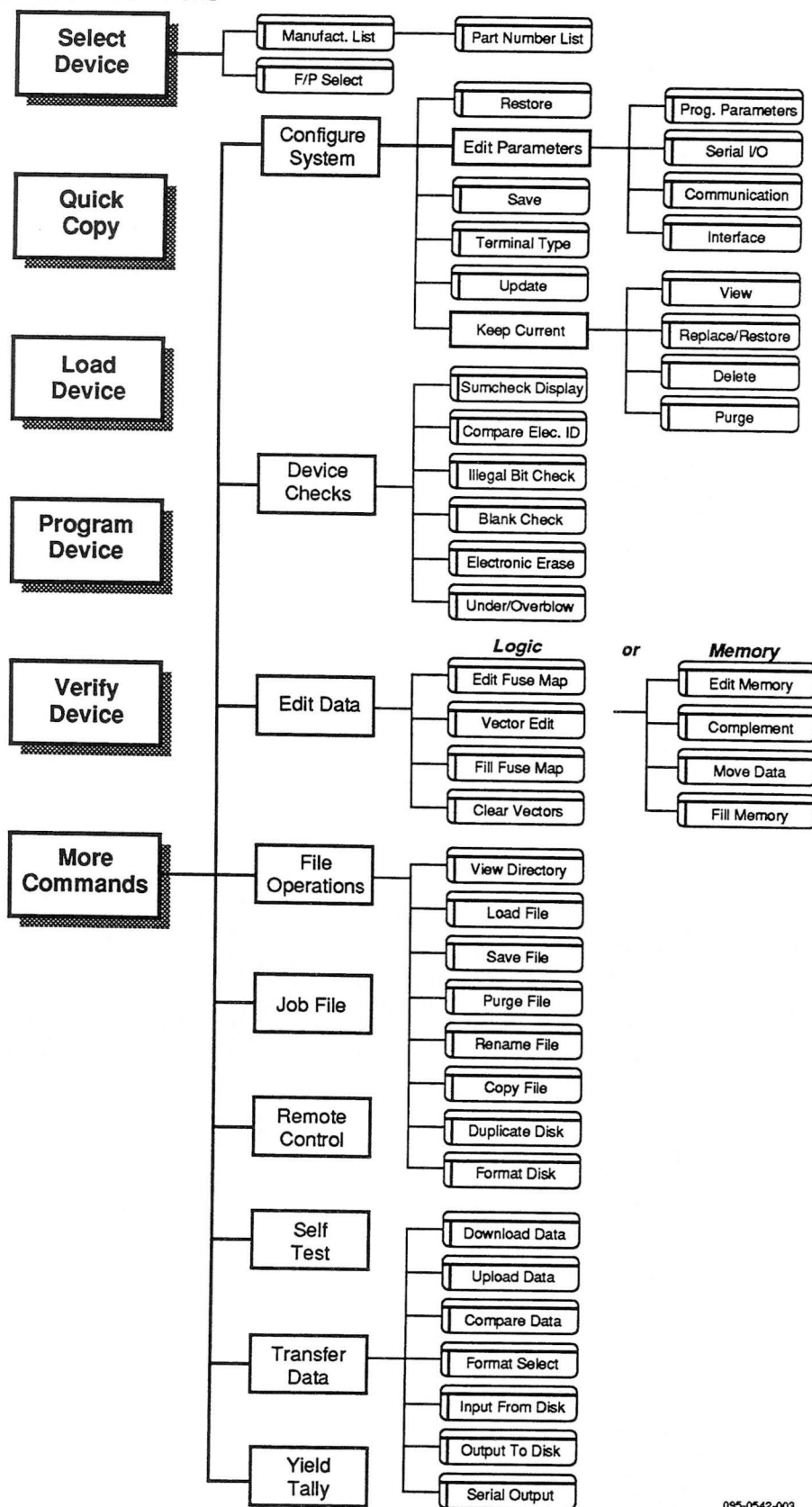
#### Dialog Window Screen

Selecting the item shown in a T-box brings you to your final destination, a dialog window.



Figure 5-1  
The Command Tree

**Main Menu Selections**



095-0542-003

---

## More Commands

In general, the commands found under the More Commands menu do things other than loading, programming, and verifying devices.

The More Commands is a multi-level menu with some commands nested three levels deep. The items on the top-level of the More Commands menu are described below:

- **Configure System** — Contains commands to perform the update operation, and edit, save, and restore UniSite's communications, interface, serial I/O, and programming parameters. (These are the items shown on the default parameters list at the beginning of this section.) From this menu, you can also select a new terminal type, and access Keep Current Configuration functions. You could use these commands to set up unique parameter files for each device type you want to program and then save those values from the More Commands/Configure System/Save screen. These parameter settings can then be loaded at a later time using the More Commands/Configure System/Restore screen.
- **Device Checks** — Performs device tests on socketed devices.
- **Edit Data** — Allows you to edit RAM or disk data. Separate editing features exist for logic and memory devices.
- **File Operations** — Performs various operations on UniSite's disk files, such as loading, saving, deleting, or renaming a file.
- **Job File** — Allows you to play back a series of keystrokes. This is useful if you are consistently programming the same devices. Up to ten job files may be stored on any Algorithm or System disk.
- **Remote Control** — Switches UniSite into remote mode, where it will accept commands sent from a remote computer. Chapter 6, "Computer Remote Control," lists the commands recognized by UniSite in remote mode.
- **Self-test** — Performs diagnostic checks on UniSite's circuitry.
- **Transfer Data** — Allows you to upload or download data to or from UniSite. Also allows you to select or change the data translation format.
- **Yield Tally** — Allows you to view or clear programming statistics.

## Configure System

The commands on the Configure System menu allow you to accomplish four basic tasks:

- Change communications protocols between UniSite and the other equipment connected to UniSite, such as a terminal, or a host computer.
- Configure the Remote and Terminal ports so they will be compatible with your terminal or host computer.
- Edit, save, or restore a set of programming features unique to the device type you want to program.
- Access Keep Current algorithm files.

The commands available on the Configure Systems menu are described on the following pages.

## Edit

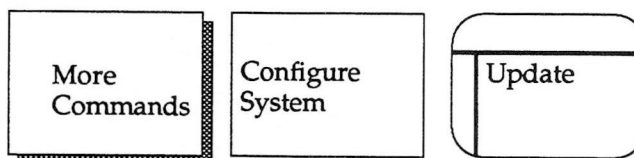
Use the commands on the Edit menu to change system parameters. These parameters include the settings of various options and features for the Programming, Serial I/O, Communication, and Interface screens.

Selecting Edit from the Configure System menu will display the Edit Parameter menu. From this menu you can choose Programming, Serial I/O, Communication, or Interface parameter screens which are described in the following subsections. Default parameter settings are shown in the table at the beginning of this chapter.

The system parameters that can be saved and restored with the More Commands/Configure System/Save and More Commands/Configure System/Restore commands are listed below.

## Update

Use this command to update a new version of the Algorithm disk.



## When Should I Use This Command?

Use this command when you receive a new Algorithm disk. When shipped from the factory, the Algorithms disk is accompanied by a security device which contains the information necessary to update the Algorithm disk.

---

*Note: When you first receive your UniSite, the System disk and the Algorithm disk are already installed, so you don't need to run the Update command.*

## Before You Begin

1. Make sure the Site40 or Site48 is installed in UniSite.
2. Make sure the cable connecting UniSite and the controlling terminal/PC/workstation is connected to the **Terminal** port on UniSite.
3. Make sure that the communication parameters on your controlling terminal/PC/workstation are set as follows:
  - 9600 baud
  - 1 stop bit
  - 8 data bits
  - No parity

Later, when you are finished installing the new version of system software, you can reconfigure your UniSite as you had it before the update.

## Updating the Algorithm Disk

Follow the steps below to update a new Algorithm disk.

1. Make sure Site40 or Site48 is installed in UniSite.
2. Power up UniSite if it is not already powered up. Make sure you boot up UniSite with the NEW System disk in drive A. If you have a two drive UniSite, make sure the NEW Algorithm disk is in drive B.  
If you have a two-drive UniSite, skip to step 4.
3. If you have a single-drive UniSite, boot the UniSite with the System disk in drive A. When UniSite finishes booting, put the NEW Algorithm disk in drive A. Press **M C U**.

Figure 5-2  
The Update Screen

4. You should be looking at the Update screen, which is shown in Figure 5-2.

FILENAME:	RAM AVAIL: 2176KB	REV: X.XX Y.YY Z.Z
MANUFACTURER:	PART #:	FAMILY/PIN CODE: 000 / 000
I/O FORMAT:		

---

UPDATE DEVICE ALGORITHMS

**WARNING:** Removing the system disk, or turning off the system power will damage the programmer.

- (1) Insert Algorithm disk into drive A or B.
- (2) Insert the security device into the Site40 or Site48 socket.
- (3) Press Return to update device algorithms.
- (3) When the message "OPERATION COMPLETE" appears, discard the security device.

Return: Execute      F1: Main menu      F2: Prev menu      F3 or ?: Help

5. Insert the security device, which was shipped with the Update Kit or the Upgrade Kit, into the socket in the small module. (You can use either Site40 or Site48.) Insert the device as if you were going to program it. Lock the security device into place.
6. Press **[J]** to start the update operation. The action symbol rotates while UniSite is working. When the update is done, the following message is displayed in the message bar:
- OPERATION COMPLETE
7. Discard the used security device. It is no longer needed and has been rendered useless.

### Verifying the Update

This section tells you how to verify that you installed the software update properly.

1. Press **[F1]** to return to the Main Menu.
2. Press **[S]** to choose the Select Device command. Select any device; the specific device you select is not important.
3. UniSite displays the following message if the software update was not installed properly.

OPERATION ABORTED: Product security violation

Contact Data I/O Customer Support if the update did not install properly.

If UniSite returns to the Main Menu without displaying an error message, you installed the update properly. You are finished with the installation of the new version of system software.

### When You Are Finished

When you are finished updating your Algorithm disk, we suggest you make a backup copy of your new Algorithm disk and new System disk. See the Duplicate Disk command for more information on making a backup copy of your Algorithm disk and System disk.

---

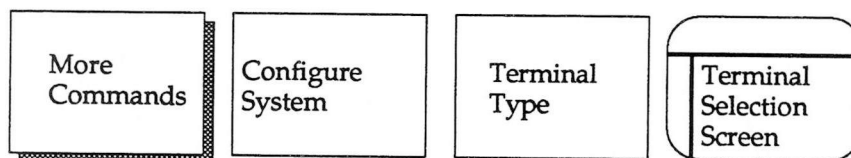
*Note: The backup disks must first be formatted using the UniSite Format Disk Operation.*

If you have access to a DOS-based PC with a 3.5" disk drive, you can use the DOS DISKCOPY command to make a copy of your Algorithm disk and System disk. If you use DOS, make sure you use DISKCOPY and not COPY. The backup must be an exact, bit-for-bit, sector-for-sector copy of the original. Store the backup copy in a safe place.

Also, check your job files to make sure they produce the same results as they did before you updated your system. We suggest you re-record your job files when you change versions of system software or when you add libraries. For more information see the description of the Job Files command later in this chapter.

## Terminal Type

This command changes the current and default terminal types.



A list of compatible terminal types follows the instructions for changing the terminal type.

To change the current terminal type or default terminal type, follow these steps:

1. If you have not already done so, configure your terminal to match one of the compatible terminal types.
2. Select the Serial I/O Parameters screen from the More Commands/Configure System/Edit/Serial I/O menu and observe the settings of the port you want to connect the new terminal to. If the terminal's communications protocol does not match the port's, change the settings of the new terminal to match the port's settings.
3. Select the More Commands/Configure System/Terminal Type command. At this point UniSite displays the default and current terminal types, and the available terminal types. Select a terminal type, enter the number corresponding to that terminal type and press ☐. You have changed the terminal type for this current session.
4. UniSite then prompts you with the following:  

```
Save terminal type as power on default? (Y/N) [N]
```

If you want to change the default terminal type, then continue with step 5. If you do not want to change the default terminal type, then go to step 6.
5. If you do not want to change the default terminal, press ☐ and go to step 7.
6. To change the default terminal type, press ☐. UniSite saves the new terminal type to disk. The new terminal type is now part of the power-on parameters.
7. The screen clears and UniSite returns to the Configure System Parameters menu. Resume normal operation.

## Approved Terminals

UniSite is compatible with the terminal types listed below. If your terminal is not included in the list, refer to the manual supplied with the terminal to determine if it can emulate one of those mentioned below.

- ANSI 3.64 compatible terminals
- DEC VT-100 compatible terminals
- Qume QVT-101 compatible terminals
- TELEVIDEO TVI-910 compatible terminals
- Wyse WY-30 compatible terminals

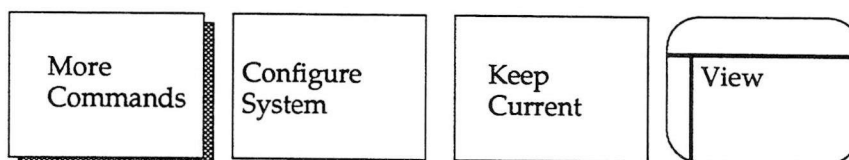
## Keep Current

The commands in the Keep Current menu allow you to access Keep Current algorithm files (.KCx). Commands available on this menu include the following:

- View
- Replace/Restore
- Delete
- Purge

### View

This command allows you to view a list of .KCx files.



View displays information on all .KCx files found on both drives A and B. Compatibility between system software and Keep Current algorithms is not checked.

To view Keep Current algorithm files, follow these steps:

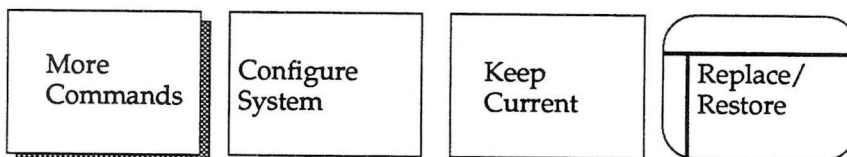
1. Insert the disk with the .KCx files you want to view into either disk drive.
2. When you select the View command, the dialog window fills with a directory listing. UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you want to view files on another disk, press **F2**, insert another disk, and return to the beginning of this step.



## Replace/Restore

This command displays the Replace/Restore screen. In the Replace/Restore screen, Keep Current algorithms can be toggled between "replaced" and "restored" status.



If a part is marked as "replaced," the Keep Current algorithm is used instead of its corresponding algorithm from the **ALG.SYS** file during normal device selection. Parts previously marked as "replaced" can be restored, in this case, the **ALG.SYS** algorithm is used during normal device selection for that part.

To toggle algorithm(s) between "replaced" and "restored" status, follow these steps:

1. Insert the disk with the .KCx files you want to replace or restore into one of the disk drives. Insert your algorithm disk in the other drive.
2. When you select the Replace/Restore command, UniSite first checks to see if **ALG.SYS** and **KCMARKER.SYS** have been loaded into RAM. If they have not been loaded, UniSite will search for the algorithm disk. If the algorithm disk is not found, the following message is displayed:

Cannot access system file. Insert algorithm disk.

If this message is displayed, insert the algorithm disk into one of the disk drives, and try again.

If no Keep Current algorithms are found or the algorithms are not compatible with the current version of your system software, the following message is displayed:

Insert Keep Current algorithm disk

If this message is displayed, insert a disk with compatible Keep Current algorithms into one of the disk drives, and try again.

3. On the Replace/Restore screen, the dialog window fills with a directory listing with parts marked as "replaced" displayed in reverse video. UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

Note that not all .KCx files are displayed. The only files that are displayed are those that

- Have a corresponding algorithm in **ALG.SYS** (the algorithm can already be selected during the normal device selection)
- Are compatible with your version of the system software

If you want to view files on another disk, press **F2**, insert another disk, and return to the beginning of this step.

4. Move the cursor to the Replace/Restore field and enter the number corresponding to the file you want to replace or restore.
5. To toggle the file, press ☐. If you do not want to toggle the file, press **F2** to return to the Keep Current Configuration menu.

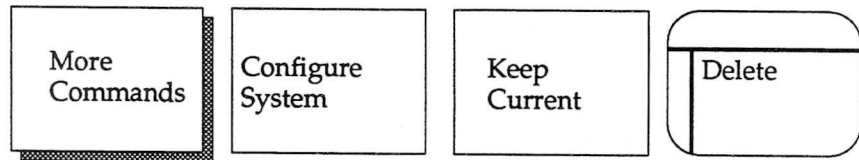
If you toggle the part to "replaced" status, it is displayed in reverse video. If the part was already marked as "replaced," it is toggled to "restored" status.

---

*Note: The maximum number of replaced algorithms is 10.*

## Delete

This command deletes a .KCx file from a disk.



To delete a file from a disk, follow these steps:

1. Insert the disk with the .KCx file you want to delete into either disk drive.
2. When you select the Delete command, the dialog window fills with a directory listing. UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the file you want to delete, press **F2**, insert another disk, and return to the beginning of this step.

3. Move the cursor to the Delete field and enter the number corresponding to the file you want to delete.
4. Move the cursor to the Are you sure field and press **Y**.

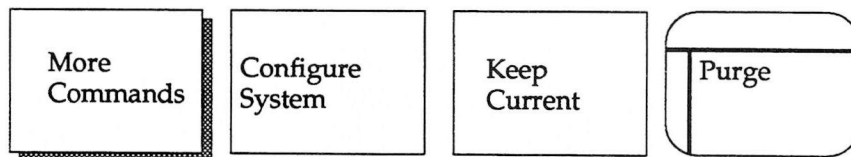
---

**CAUTION:** If you do not want to delete the file, do not press Enter.

5. To delete the file, press **Enter**. If you do not want to delete the file, press **F2** to return to the Keep Current Configuration menu.

## Purge

This command deletes all outdated .KCx files from a disk leaving only the most up-to-date algorithms.



To purge files from a disk, follow these steps:

1. Insert the disk with the .KCx files you want to purge into either disk drive.
2. When you select the Purge command, the dialog window fills with a directory listing of outdated Keep Current files found on both drives A and B (outdated Keep Current algorithm files have version numbers older than the current system software version number). UniSite displays up to 10 files at one time. If there are more than 10 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the files you want to purge, press **F2**, insert another disk, and return to the beginning of this step.

3. In the Are you sure field, press **Y**.

---

**CAUTION:** If you do not want to purge files, do not press Enter.

4. To purge files displayed on the screen, press **Enter**. If you do not want to purge files, press **F2** to return to the Keep Current Configuration Operations menu.

If no more .KCx files are left on the disk(s), UniSite will return to the Keep Current Configuration menu.

## Device Checks

The commands on the Device Checks menu allow you to check devices you want to program and to check data in user memory. Commands available on this menu include the following:

- Sumcheck Display
- Compare Electronic ID
- Illegal Bit Check
- Blank Check
- Electronic Erase
- Under/Over-Blow (Logic Devices Only)

Before you can execute a command described in this subsection, you must do the following:

1. Select a device. For more information, see the section titled "Select a Device" earlier in this chapter.
2. Insert and lock a device into the socket. (This applies only if you are checking a device, not if you are checking User RAM.)

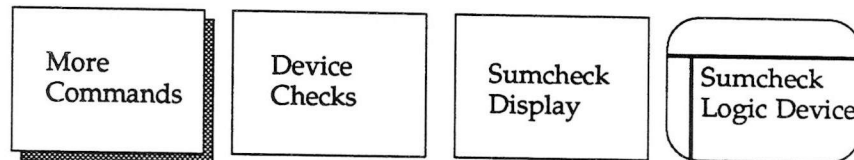
### Sumcheck Display

The sumcheck is a 4- or 8-digit hexadecimal number that, when compared to the original data, allows you to verify that a copy of the data matches the original data. Remember, you must select a device before you calculate the sumcheck. The sumcheck is computed by adding each 8-bit byte in the specified data range into a 32-bit result with the carry dropped.

Below, the options for sumchecking logic and memory are described, with logic devices explained first, followed by memory devices.

### Sumcheck Logic Device

If you have selected a logic device, then the Sumcheck Logic Device screen appears.



To sumcheck a logic device, follow these steps:

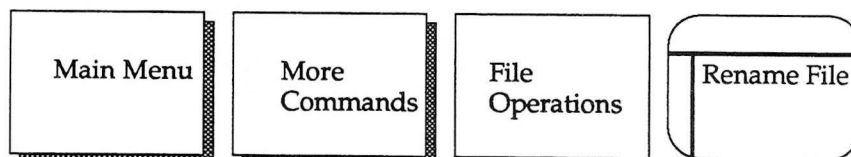
1. Select and socket a logic device.
2. Enter the parameters described below.
3. Press ☐ and UniSite calculates the 4-digit sumcheck of the fuse pattern. The sumcheck is displayed in the message bar.

The following parameters appear on this screen:

- **Source (R,D)** — Selects the source of the data to be sumchecked. Press ☐ to toggle between R (RAM) and D (disk).
- **Filename** — Specifies the name of the disk file to sumcheck. This option appears only if you specify disk as the Source. The filename must follow standard DOS conventions, and can contain a drive designator. An example of a valid filename is `a:16r8.dat`.

## Rename File

This command changes the name of a file.



To rename a file, follow these steps:

1. Insert the disk with the file you want to rename into one of the disk drives.

---

*Note: You cannot rename a file to a different disk drive than the current one displayed on the screen.*

2. When you select the Rename File command, the dialog window fills with the directory listing. UniSite displays up to 28 files at one time. If there are more than 28 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the file you want to rename, press **F2**, insert another disk, and return to the beginning of this step.

3. Move the cursor to the From field and enter the current name of the file you want to rename. Remember to specify which drive holds the file you want to rename.
4. Move the cursor to the To field and enter the new name for the file you want to rename. Remember to specify which drive holds the file you want to delete.

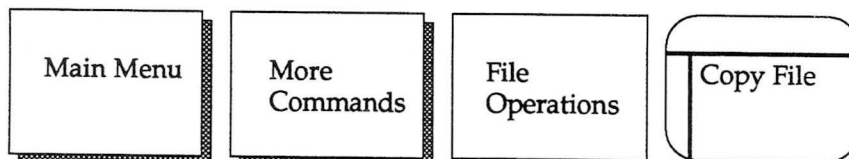
---

**CAUTION:** *If you do not want to rename the file, do not press Enter.*

5. To rename the file, press **Enter**. If you do not want to rename the file, press **F2** to return to the File Operations menu.

## Copy File

Use the Copy command to copy a file or a group of files.



To copy a file (or group of files), follow these steps:

1. Insert the disk with the file you want to copy into one of the disk drives.

The Copy command can be used on either a single- or a dual-drive UniSite.

2. When you select the Copy File command, the dialog window fills with the directory listing. UniSite displays up to 28 files at one time. If there are more than 28 files, press **Ctrl** + **N** to display the next page of files. Press **Ctrl** + **P** to display the first page of files.

If you do not see the file you want to copy, press **F2**, insert another disk, and go back to step 1.

3. Move the cursor to the From field. Enter the name of the source file. Remember to specify which drive holds the file(s) you want to copy.
4. Move the cursor to the To field and enter the name of the destination file. Remember to specify which drive holds the file(s) you want to copy.
5. Move the cursor to the Single Drive File Copy to Different Disk parameter. If you want to copy the file to a different disk and use the same drive, set this parameter to Y. UniSite prompts you to insert the source disk or destination disk at the appropriate times. This operation results in RAM being used as a temporary storage buffer and alters the contents of RAM

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*Note: When copying with the Single Drive File Copy to Different Disk parameter set to N, you are prompted to swap disks when necessary. Only one file at a time can be copied using this method.*

Otherwise, if you want to copy the file from one drive to the other on a dual-drive UniSite or to the same disk on either a single- or a dual-drive UniSite, set this parameter to N. Make sure the destination file has a different filename than the source file.

---

*Note: When copying with the Single Drive File Copy to Different Disk parameter set to N, you can copy a group of files by using an asterisk (\*) as a wildcard in the name of the source and destination file.*

---

**CAUTION:** If you do not want to copy the file, do not press Enter.

6. To begin the copying, press **Enter**. If you do not want to copy the file, press **F2** to return to the File Operations menu.

Summary of Standard  
CRC Commands

Command	Description	Response
&	Insert Parts Mode	None
-	Invert RAM	>
/	View device error status	XXYY>
hhhhh:	Select device begin address	>
hhhhh;	Select memory block size	> ; (CRC Command)
hhhhh<	Select memory begin address	>
nn=	Select I/O timeout	>
fffppp@ or ffpp@	Select device type	>
cffA	Enter translation format	>
B	Blank check	>
C	Compare to port	>
D	Set odd parity	>
E	Set even parity	>
F	Error status inquiry	HHHHHHHH>
G	Configuration inquiry	RRDD>
H	No operation	>
I	Input from port	>
J	Set 1 stop bit	>
K	Set 2 stop bits	>
nnL	Load RAM from device	>
hhM	Enter record size	>
N	Set no parity	>
O	Output to port	>
nnP	Program device	>
nnR	Return status of device	AAAAA/BB/C>
nnS	View sumcheck	HHHH>
nnT	Illegal-bit test	>
hhU	Set nulls	>
nnV	Verify device	>
hhhhhhhW	Set I/O offset	>
X	Error code inquiry	HH....HH>
Y	Display parity errors	HHHH>
Z	Exit remote control	none
[	View device family/pinout code	FFFPPP>
\	Move memory block	>
hh^	Clear/fill RAM with data	>



Summary of Extended  
CRC Commands

Command	Description	Response
01]	Display system configuration	RRR/SSSS/AAAA/MM/ PPP/IIVV/JJVV/KKVV/QQ>
<i>nn</i> 02]	Set upload wait time	>
<i>n</i> 03]	Set device ID verify option	HHHHHHHH> or >
<i>nn</i> 04]	Set Remote port baud rate	>
<i>xxx...xxx</i> 05]	Set host command	>
<i>n</i> 06]	Select data bits	>
<i>n</i> 07]	Set next set member	>
<i>n</i> 08]	Select programming mode	>
<i>nn</i> 22]	Set data word width	>
<i>n</i> 23]	Select number of verify passes	>
<i>n</i> 24]	Select security fuse option	>
<i>n</i> 26]	Specify logic verify options	>
<i>n</i> 27]	Set/clear enable/disable security fuse	>
<i>n</i> 28]	Fill fuse map	>
<i>n</i> 29]	Set reject count option	>
<i>hh</i> 2A] or <i>h</i> 2A]	Enable programming options	>
<i>hh</i> 2B] or <i>h</i> 2B]	Disable programming options	>
<i>n</i> hh2C]	Select memory fill option	>
<i>h</i> 2D]	Vector test options	>
<i>nn</i> 2F]	Return 8-character sumcheck	HHHHHHHH>
<i>xxx...xxx</i> 30]	Set data file name	>
<i>n</i> 31]	Set data source/destination	>
<i>xxx...xxx</i> 33]	Select device manufacturer	>
<i>xxx...xxx</i> 34]	Select device part number	>
<i>xxx...xxx</i> 38]	Load file from disk	>
39]	Delete all RAM files	>
<i>xxx...xxx</i> 3B]	Delete disk file	>
<i>n</i> 3C]	Set data transfer port	>
<i>xxx...xxx</i> 3E]	Select Keep Current algorithm	>
40] or <i>n</i> 40]	Upload parts list	See text following
<i>n</i> 41]	Upload self-test results	AAA...AA>
43]	Upload yield tally	See text following
46]	Clear yield tally	>
49]	Suspend CRC mode	Displays terminal screen
<i>n</i> 4D]	Select Algorithm Source	>
DC]	Device check	See text following
DF]	View status of sockets	HH HH . . .HH>
EB]	Input JEDEC data from host	>
EC]	Output JEDEC data to host	>
FC]	Restore CRC entry default parameters	>
FD]	Restore user-defined CRC parameters	>
FE]	Save user-defined CRC parameters	>

<i>hh2D]</i>	<p><b>Vector Test Options</b> — Enables or disables the compensated vector test, serial vector test, and high speed logic driver options. Valid arguments are listed and described below:</p> <ul style="list-style-type: none"> <li>Bit 0 = 0 to disable compensated vector test</li> <li>Bit 0 = 1 to enable compensated vector test</li> <li>Bit 1 = 0 to disable high speed logic driver</li> <li>Bit 1 = 1 to enable high speed logic driver</li> <li>Bit 2 = 0 to disable serial vector test</li> <li>Bit 2 = 1 to enable serial vector test</li> </ul>
<i>2F]</i> or <i>nn2F]</i>	<p><b>View 8-Character Sumcheck</b> — Returns the 8-character hexadecimal sumcheck of the data in User RAM. Refer to the S command for more information.</p>
<i>xxx...xxx30]</i>	<p><b>Set Data File Name</b> — Sets the filename for any subsequent file operations.</p>
<i>n31]</i>	<p><b>Set Data Source/Destination</b> — Sets the source/destination for a data file. Valid arguments are listed and described below:</p> <ul style="list-style-type: none"> <li>0 = RAM</li> <li>1 = Disk</li> <li>2 = RAM file</li> </ul>
<i>xxx...xxx33]</i>	<p><b>Select Device Manufacturer</b> — Selects the device manufacturer for device operations. Valid arguments can range from 1 to 13 alphanumeric characters. Valid arguments must also match the manufacturer name exactly as it appears on the Manufacturer List screen or as it is uploaded via the 40] command. The manufacturer selected does not take effect until the 34] command is sent to select the device part number.</p>
<i>xxx...xxx34]</i>	<p><b>Select Device Part Number</b> — Selects the device part number for device operations. Valid arguments can range from 1 to 29 alphanumeric characters. Valid arguments must also match the part number as it appears on the Parts Number screen for the selected Manufacturer or as it is uploaded via the 40] command. This command selects an algorithm based on the part number sent in this command and the Manufacturer sent in the 33] command.</p>
<i>xxx...xxx38]</i>	<p><b>Load File From Disk</b> — Loads a disk file into RAM. Valid arguments range from 1 to 14 alphanumeric characters. The entire file is always loaded, and the User Data Size is updated to reflect the size of the file loaded into RAM. Drive A is the default drive. To load a file from the B drive, precede the filename with a B:. For example, <b>B:27128.DAT38]</b>.</p>
<i>39]</i>	<p><b>Delete All RAM Files</b> — Clears RAM files from memory. Use this command to keep UniSite from running out of RAM space for files. RAM files stay in memory until this command is sent to clear them.</p>
<i>xxx...xxx3B]</i>	<p><b>Delete Disk File</b> — Deletes a disk file. Valid arguments range from 1 to 14 characters and may include the * wildcard character. Drive A is the default drive. To delete a file from the B drive, precede the filename with a B:, for example, <b>B:27128.DAT3B]</b>.</p>

`n3C]`

**Set Data Transfer Port** — Specifies which port (Terminal or Remote) UniSite will use for CRC data transfer operations (such as the input, output and JEDEC input/output commands). Unless specified otherwise, UniSite defaults to the Remote port for data transfer operations. This command makes it possible to transfer data to UniSite from a system other than the one currently running your CRC driver program. The driver program would be communicating with the Remote port of UniSite and could initiate a download or upload with a different computer connected to the Terminal port of UniSite. This is useful if the data files which you want to use exist on a system other than the one running your CRC driver program. CRC commands are still recognized only on the Remote port. Valid arguments are listed and described below:

- 0 Remote Port
- 1 Terminal Port

`xxx...xxx3E]`

**Select Keep Current algorithm** — The Keep Current algorithm is loaded from the specified .Kcx filename. With this CRC command, Keep Current algorithms with different revision numbers may be selected for the same device.

`40]`

**Upload Parts List** — Uploads the contents of the current algorithm source file. Use the `n4D]` command to specify the algorithm source file. The data is transferred as a string of characters, in the following format:

Definition	Number of Bytes
Number of manufacturers	2
<CR><LF>	2 (hex)
Next is data for EACH device manufacturer, organized as follows:	
Device manufacturer's name	1 to 32
Colon	1
Number of devices	3
for this manufacturer	
Next, the following is repeated for each device this manufacturer supports:	
<CR><LF>	2 (hex)
Device's part number	1 to 32
Colon	1
Family code	4
Pinout code	4
Electronic ID	8
Module device support	2
When the bit is set then	
Bit 7	the device is supported on SetSite
Bit 6	(unused)
Bit 5	the device is supported on PinSite
Bit 4	the device is supported on ChipSite
Bit 3	the device is supported on USM-340
Bit 2	the device is supported on Site48
Bit 1	the device is supported on Site40
Bit 0	the device is not supported
	on HandlerLink
Base	2
<CR><LF> next device for <i>this</i> manufacturer . . . etc	
<CR><LF> next manufacturer . . . etc	

- 99 **End of file exceeded** — Appears when the memory block size and memory begin address parameters you specified in the Programming screen are too large for the data file you intend to use for programming. When this error code appears, change the memory block size and memory begin address file size parameters so they are small enough to accommodate the data file. You can perform the operation without changing anything, but only part of the device will be programmed.
- 9A **Algorithm disk cannot be found** — Appears if you are selecting a device and do not have the Algorithm disk installed. Insert the Algorithm disk in the drive and send the device selection command again.
- 9B **Incompatible system and algorithm disks** — The version number of the Algorithm disk is not compatible with the version number of the System disk. Insert the correct version of the Algorithm disk and try the operation again.
- 9C **Invalid command for this mode** — The command received is not valid in single device mode: it is a set/gang mode command. This error will also be returned if the set mode is not enabled or a non-gangable device is selected. Select a different command, select a different device, or select set/gang mode.
- 9D **I/O address beyond range of data format selected** — An I/O address exceeded the highest value allowed in the address field of the data format selected. Prior to performing an upload or output to disk operation the programmer calculates the highest I/O address that will be output based on the parameters supplied by the user and aborts the operation if the I/O address is too large for the data format selected. The formula for calculating the highest I/O address is:
- $$\text{Highest I/O address} = \text{I/O addr offset} + \text{User data size} - 1$$
- To avoid this error condition either select a different data format (one which will support the I/O addresses for the transfer operation) or decrease the value of the I/O offset address and /or the User data size to achieve I/O addresses within the range of the data format selected. The I/O addr offset parameter is considered an unsigned value. If it is set to the special default value of FFFFFFFF, it is treated as a value of 0. See the section titled "Table of Highest I/O Addresses" in Chapter 7 for more a list of the highest I/O address allowed for each translation format.
- A1 **No Electronic ID** — The device does not contain an electronic ID. Turn off the Electronic ID option or change devices.

A2	<b>Electronic ID verify error</b> — The device you tried to program did not have the correct electronic ID. Insert the correct device in the socket, or select a different device.
AB	<b>Unable to load system file from system disk</b> — You tried to exit or suspend CRC and the System disk was not in drive A. Make sure the System disk is in drive A when you exit or suspend CRC.
AC	<b>Security violation</b> — You tried to use a new version of system software that has not been installed yet. Exit CRC mode and perform the Update command to install the new version of software.
AE	<b>Keep Current algorithm disk not found. Insert your Keep Current algorithm disk</b> — This error code is returned when the Keep Current algorithm file for the specified device is not found. Insert the disk with the Keep Current algorithm file for the specified device, and try again.
B2	<b>Partial device operation not allowed</b> — This error code is returned when block limits other than the defaults are used for a device that only supports the defaults. In this case, the block size must be equal to or greater than the device size.
B4	<b>Odd Memory Begin Address or User Data Size Incompatible with Data Word Width</b> — This error code is returned when you try a device operation on a 16-bit (or larger) device and either the Memory Begin Address is set to an odd number or the User Data Size is not compatible with the Data Word Width selected. Frequently, this happens when a 16-bit device is used and the User Data Size (defined in bytes) is an odd byte count. Adjust your User Data Size or the Memory Begin Address.
D1	<b>RAM file buffer exceeded</b> — Appears when you attempt to write data beyond the end of a previously allocated RAM file.
D2	<b>RAM file not found</b> — Appears when you attempt to perform an operation with a RAM file and UniSite cannot find the RAM file.
D3	<b>RAM file create error</b> — Appears when you attempt to create a RAM file but the attempt was unsuccessful. Possible explanations are: an illegal filename was used, or the filename already exists.
D4	<b>RAM file space exhausted</b> — Appears when you attempt to create a RAM file but the attempt was unsuccessful. Possible explanations are: there was not enough RAM space remaining for RAM files or there was not enough directory entries left for RAM files.
D5	<b>Port Transfer Error</b> — Appears when you try to transfer data over a serial port which is not properly connected. If this error occurred after using the <code>n3C]</code> command to set the data port to the Terminal port, ensure that the Terminal port is properly connected.
FE	<b>Undefined error</b> — An error occurred that the CRC program could not categorize. Document the method in which the error occurred and call Data I/O to report the problem.
FF	<b>Operation Aborted</b> — This code will be returned if the SetSite operation being performed was halted prematurely. For example, if you were programming devices and pulled the SetSite socket lever up to the OPEN (stop) position.

---

## The 5-Level BNPF Format, Codes 08 or 09

Except for the start and end codes, the same character set and specifications are used for the ASCII-BNPF and 5-level BNPF formats.

Data for input to UniSite is punched on 5-hole Telex paper tapes to be read by any paper tape reader that has an adjustable tape guide. The reader reads the tape as it would an 8-level tape, recording the 5 holes that are on the tape as 5 bits of data. The 3 most significant bits are recorded as if they were holes on an 8-level tape. Tape generated from a telex machine using this format can be input directly to a serial paper tape reader interfaced to UniSite. UniSite's software converts the resulting 8-bit codes into valid data for entry in RAM.

The start code for the format is a left parenthesis, (Figs K on a telex machine), and the end code is a right parenthesis, (Figs L on a telex machine). The 5-level BNPF format does not have addresses.

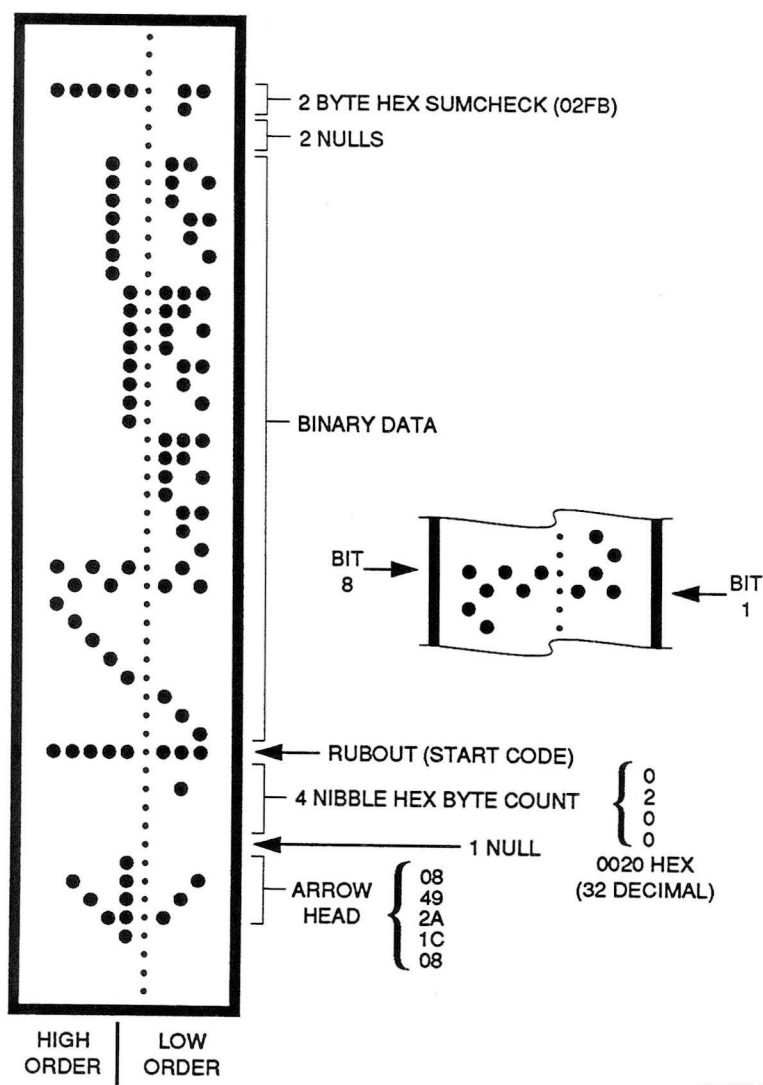
---

*Note: Data without a start or end code may be input to or output from UniSite by use of the alternate data translation format code, 09. This format accepts an abort character (10 hex) to abort the transmission.*

## Formatted Binary format, Code 10

Data transfer in the Formatted Binary format consists of a stream of 8-bit data bytes preceded by a byte count and followed by a sumcheck, as shown in Figure 7-3. The Formatted Binary format does not have addresses.

**Figure 7-3**  
*An Example of Formatted Binary Format*



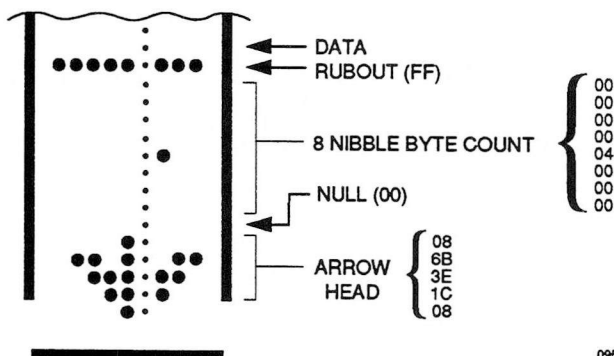
095-0075-002

UniSite stores incoming binary data upon receipt of the start character. Data is stored in RAM starting at the first RAM address specified by the Memory Begin Address parameter and ending at the last incoming data byte.

A paper tape generated by a programmer contains a 5-byte, arrow-shaped header followed by a null and a 4-nibble byte count. The start code, an 8-bit rubout, follows the byte count. The end of data is signaled by two nulls and a 2-byte sumcheck of the data field. Refer to Figure 7-4.

If the data output has a byte count GREATER than or equal to 64K, an alternate arrow-shaped header is used. This alternate header (shown below) is followed by an 8-nibble byte count, sandwiched between a null and a rubout. The byte count shown here is 40000H (256K decimal). If the byte count is LESS than 64K, the regular arrowhead is used instead. Data that is input using Formatted Binary format will accept either version of this format.

**Figure 7-4**  
*An Example of Formatted Binary Format*



In addition, a third variation of this binary format is accepted on download. This variation does not have an arrowhead and is accepted only on input. The rubout begins the format and is immediately followed by the data. There is no byte count or sumcheck.



## DEC Binary Format, Code 11

Data transmission in the DEC Binary format is a stream of 8-bit data bytes with no control characters except the start code. The start code is one null preceded by at least one rubout. A tape output from UniSite will contain 32 rubouts in the leader. The DEC Binary format does not have addresses.

## Spectrum Format, Codes 12 or 13

In this format, bytes are recorded in ASCII codes with binary digits represented by 1s and 0s. During output, each byte is preceded by a decimal address.

Figure 7-5 shows sample data bytes coded in the Spectrum format. Bytes are sandwiched between the space and carriage return characters and are normally separated by line feeds. The start code is a nonprintable STX, CTRL-B (or hex 02), and the end code is a nonprintable ETX, CTRL-C (or hex 03).

Figure 7-5  
An Example of Spectrum  
Format

Optional Start Code → ○	0000	11111111	
is a nonprintable STX	0001	11111111	
	0002	11111111	
	0003	11111111	
	0004	11111111	
	0005	11111111	
	0006	11111111	
	0007	11111111	
	0008	11111111	
	0009	11111111	
	0010	11111111	
	0011	11111111	
	0012	11111111	
	0013	11111111	
	0014	11111111	
	0015	11111111	○ ← End code is a nonprintable ETX

Address Code is 4 decimal digits

4 or 8 data bits appear between the space and the carriage return

095-0077-002

*Note: Data without a start or end code may be input to or output from UniSite by use of the alternate data translation format code, 13.*

## POF Format (Programmer Object File), Code 14

The Programmer Object File format (POF) provides a highly compact data format to enable translation of high bit count logic devices efficiently. This format currently applies to MAX™ devices, such as the Altera 5032.

The information contained in the file is grouped into "packets." Each packet contains a "tag," identifying what sort of data the package contains plus the data itself. This system of packeting information allows for future definitions as required.

The POF file is composed of a header and a list of packets. The packets have variable lengths and structures, but the first six bytes of every packet always adhere to the following structure.

```
struct PACKET_HEAD
{
    short tag;           /*tag number - type of packet */
    long length;        /*number of bytes in rest of packet */
}
```

A POF file is read by the program examining each packet and if the tag value is recognized, then the packet is used. If a tag value is not recognized, the packet is ignored.

Any packet except the terminator packet may appear multiple times within a POF file. Packets do not need to occur in numerical tag sequence. The POF reader software is responsible for the interpretation and action taken as a result of any redundant data in the file including the detection of error conditions.

The POF format currently uses the following packet types.

---

*Note: In the following packet type descriptions, one of the terms — Used, Skipped, or Read — will appear after the tag and name.*

*Used: The information in this packet is used by UniSite.*

*Skipped: This information is not used by UniSite.*

*Read: This information is read by UniSite but has no direct application.*

Creator_ID	tag = 1	Used	This packet contains a version ID string from the program which created the POF file.
Device_Name	tag = 2	Used	This packet contains the ASCII name of the target device to be programmed, for example, PM9129.
Comment_Text	tag = 3	Read	This packet contains a text string which may consist of comments related to the POF file. This text may be displayed to the operator when the file is read. The string may include multiple lines of text, separated by appropriate new line characters.

Tag_Reserved	tag = 4	Skipped
Security_Bit	tag = 5	Used This packet declares whether security mode should be enabled on the target device.
Logical_Address_and_Data	tag = 6	Read This packet defines a group of logical addresses in the target device and associates logical data with these addresses. The addresses comprise a linear region in the logical address space, bounded on the low end by the starting address, and extending upward by the address count specified in the packet.
Electrical_Address_and_Data	tag = 7	Used This packet defines a group of electrical addresses in the target device and associates data values with those addresses. The data field is ordered in column-row order, beginning with the data for the least column-row address, continuing with increasing row addresses until the first column is filled, then incrementing the column address, etc.
Terminator	tag = 8	Used This packet signals the end of the packet list in the POF file. This packet must be the N-th packet, where N is the packet count declared in the POF header. The CRC field is a 16-bit Cyclic Redundancy Check computed on all bytes in the file up to, but not including, the CRC value itself. If this CRC value is zero, the CRC check should be ignored.
Symbol table	tag = 9	Skipped
Test Vectors	tag = 10	Used This packet allows the POF to contain test vectors for post programming testing purposes. Each vector is a character string and uses the 20 character codes for vector bits defined in JEDEC standard 3A, section 7.0.
Electrical_Address_and_Constant_data	tag = 12	Skipped
Number of programmable elements	tag = 14	Read This packet defines the number of programmable elements in the target device.

---

## Absolute Binary format, Code 16

Absolute binary format is a literal representation of the data to be transferred and no translation of the data takes place during the transfer. There are no overhead characters added to the data, i.e. no address record, start code, end code, nulls or checksum. Every byte transferred represents the user's data. This format can be used to download unformatted data such as a .exe file to the programmer.

Since this format does not have an end-of-file character, download transfers will terminate after no more data is received and an I/O timeout occurs. This is true for all data formats which don't have an end-of-file character. For this reason do not use a value of 0 for the I/O timeout parameter on the communication parameters screen since this will disable the timeout. A value between 1 and 99 (inclusive) should be used for the I/O timeout parameter when using formats that require the timeout to occur.



*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

[transparent mode]	This message appears on the screen when UniSite enters the transparent mode. To exit transparent mode, type <b>Esc</b> <b>Ctrl</b> + <b>T</b> .
Trc init err	UniSite has experienced an error that it cannot recover from; turn UniSite off and reboot the system. If the error recurs, contact Data I/O Customer Support.
Updating device algorithms	This message appears when the algorithm disk is being updated in the Update Device Algorithms operation. Do not remove the algorithm disk or turn off system power for the duration of the operation.
User RAM sumcheck = sssssss	This message contains the sumcheck for all of User RAM and is generated in the Sumcheck device check screen. This calculation is done regardless of whether user data is in RAM or on disk.
Using Keep Current algorithm in filename.KCx	This message appears when the "replaced" Keep Current algorithm is used during a normal device selection operation where filename.KCx is the Keep Current algorithm file.
Vector out of range	The vector you tried to select does not exist for the device you have selected. Select a vector that is within the limits of the device or select a different device. This message may appear while you are using the vector editor.
Waiting for self-test completion.	This power-up message shows up only if you are changing the terminal selection before the power-up self-test has been completed.
WARNING Algorithm disk in drive. Hit return to continue, ^Z to abort.	This message will appear if you are attempting a file operation and have the Algorithm disk installed in the disk drive.
WARNING: System disk in drive. Hit return to continue, ^Z to abort.	This message appears during any file operation that displaces disk data. Any information currently on the disk will be erased and is not retrievable. Press <b>↓</b> to go ahead with the operation. Press <b>Ctrl</b> + <b>Z</b> , to cancel the operation.

*Note: Some system and error messages were omitted on purpose. UniSite provides online help for these messages. To access online help for a message, press **F3** or **?** when the message appears.*

**UniSite<sup>TM</sup>**

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Universal Programmer

Device List – Version 3.9

**DATA I/O**





# *Device List – Version 3.9*

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Following is a complete listing of the devices currently programmable with Version 3.9 of the UniSite Universal Programmer. The devices are organized by manufacturer, and are listed in numerical order. References in the Footnote column are explained following the list.

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**CAUTION** *Be sure you enter the proper family and pinout codes for the device you want to program. If you enter an incorrect family and pinout code, you may damage your device. Be aware that although you may enter an independently valid family code and an independently valid pinout code, when combined, these may produce an invalid (illegal) combination. The correct combination for your device is published in this table. All family/pinout combinations not contained in this table are considered "illegal".*

*Data I/O assumes no responsibility or liability for results produced by entry of "illegal" family/pinout combinations.*

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## Data I/O Device Support Policy/Liability

1. Data I/O strives to achieve more device support approvals from semiconductor manufacturers than any other programmer manufacturer or software developer.
2. Every effort is made to program an adequate number of samples according to the manufacturer supplied specification, and verify waveforms as per that specification prior to release of support. Manufacturers' approvals are to be sought in parallel with this process.
3. Data I/O's objective is to seek and obtain approvals on all devices.
4. Data I/O has made every attempt to ensure that the device information (as provided by the device manufacturer) contained in our programmers, software and documentation is accurate and complete. However, Data I/O assumes no liability for errors, or for any damages, whether direct, indirect, consequential or incidental, that result from use of documents provided with equipment or from the equipment or software which it accompanies, regardless of whether or not Data I/O has been advised of the possibility of such loss or damage.

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## Key To Device List Headings

An explanation of each of the column headings is given below.

<b>Device Part Number:</b>	The number assigned by the device manufacturer.
<b>Pins:</b>	The number of pins on the device package.
<b>Device Type:</b>	The type of device, such as EPROM, EEPROM, PAL, etc.
<b>Package Type:</b>	The type of package that the device is packaged in.
<b>Footnote:</b>	Additional information about a device. Each footnote number corresponds to a numbered description at the end of the device list.
<b>Product Version:</b>	The earliest version of UniSite software that will program the device to the manufacturer's latest specifications.
<b>Family/Pinout Code:</b>	A 4- or 6-digit hexadecimal number that designates the programming algorithm (family code) and the array size (pinout code).
<b>Module:</b>	The PSM or FSM required to program the device. The PSM fits in the smaller socket on the left side of UniSite and the FSM fits in the larger socket on the right side of UniSite.
<b>Adapter:</b>	The PPI adapter required to program the device.

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>AT and T Microelectronics</b>								
17128	8	DIP	EEPROM		3.9	231/25E	Site 40/48	
1736	8	DIP	SEROM		3.9	231/25C	Site 40/48	
1765	8	DIP	SEROM		3.9	231/25D	Site 40/48	
<b>Actel</b>								
1010/A	44	PLCC	FPGA	39	3.2	12C/0B6	PinSite	44 PIN PLCC MB
1010/A	68	PLCC	FPGA	39	3.4	12C/08E	PinSite	68 PIN PLCC MB
1010/A	68	PLCC	FPGA		3.0	12C/8AB	USM-340-001	
1010/A	84	PGA	FPGA	39	3.2	12C/8AC	PinSite	
1010/A	84	PLCC	FPGA	39	3.2	12C/7AC	PinSite	84 PIN PLCC MB
1020/A	44	PLCC	FPGA	39	3.2	146/0B6	PinSite	44 PIN PLCC MB
1020/A	68	PLCC	FPGA	39	3.2	146/08E	PinSite	68 PIN PLCC MB
1020/A	68	PLCC	FPGA		3.1	146/8AB	USM-340-001	
1020/A	84	PGA	FPGA	39	3.2	146/8AC	PinSite	
1020/A	84	PLCC	FPGA	39	3.4	146/7AC	PinSite	84 PIN PLCC MB
1020/A	84	PLCC	FPGA		3.9	146/8AD	USM-340-002	
<b>Advanced Micro Devices/MMI</b>								
10020EG8	24	DIP	PAL	40	3.6	22/6E	Site 40/48	
10020EG8	28	PLCC	PAL	28	3.6	022/76E	ChipSite	
10020EG8	28	PLCC	PAL	28	3.6	022/76E	PinSite	28 PIN PLCC MB
10020EV8	24	DIP	PAL	40	3.6	22/6D	Site 40/48	
10020EV8	28	PLCC	PAL	28	3.6	022/76D	ChipSite	
10020EV8	28	PLCC	PAL	28	3.6	022/76D	PinSite	28 PIN PLCC MB
10H20EG8	24	DIP	PAL	40	3.6	22/6C	Site 40/48	
10H20EG8	28	PLCC	PAL	28	3.6	022/76C	ChipSite	
10H20EG8	28	PLCC	PAL	28	3.6	022/76C	PinSite	28 PIN PLCC MB
10H20EV8	24	DIP	PAL	40	3.6	22/6B	Site 40/48	
10H20EV8	28	PLCC	PAL	28	3.6	022/76B	ChipSite	
10H20EV8	28	PLCC	PAL	28	3.6	022/76B	PinSite	28 PIN PLCC MB
10H20G8	24	DIP	PAL		3.6	22/42	Site 40/48	
10H20P8	24	DIP	PAL		3.6	22/42	Site 40/48	
10H8/-2	20	DIP	PAL		3.6	22/18	Site 40/48	
10H8/-2	20	PLCC	PAL		3.6	022/718	ChipSite	
10H8/-2	20	PLCC	PAL		3.6	022/718	PinSite	20 PIN PLCC MB
10H8/-2	20	SO	PAL		3.6	022/818	ChipSite	
10H8/-2	20	SO	PAL		3.6	022/818	PinSite	SOIC_30
10L8/-2	20	DIP	PAL		3.6	22/13	Site 40/48	
10L8/-2	20	PLCC	PAL		3.6	022/713	ChipSite	
10L8/-2	20	PLCC	PAL		3.6	022/713	PinSite	20 PIN PLCC MB
10L8/-2	20	SO	PAL		3.6	022/813	ChipSite	
10L8/-2	20	SO	PAL		3.6	022/813	PinSite	SOIC_30
10P4	18	DIP	PLE		2.2	18/05	Site 40/48	
10P8	24	DIP	PLE		2.2	18/16	Site 40/48	
10R8	24	DIP	PLE	1	2.2	18/86	Site 40/48	
110	44	LCC	MACH		3.8	17F/0BD	ChipSite	
110	44	LCC	MACH		3.8	17F/0BD	PinSite	44 PIN LCC MB
110	44	LCC	MACH		3.9	17F/0BD	ChipSite	
110	44	LCC	MACH		3.9	17F/0BD	PinSite	44 PIN LCC MB
110	44	PLCC	MACH		3.9	17F/0BD	ChipSite	
110	44	PLCC	MACH		3.9	17F/0BD	PinSite	44 PIN PLCC MB
11P4	18	DIP	PLE		2.2	18/06	Site 40/48	
11P8	24	DIP	PLE		2.2	18/21	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
11RA8	24	DIP	PLE	1	2.2	18/A3	Site 40/48	68 PIN PLCC MB
11RS8	24	DIP	PLE	1	2.2	18/A3	Site 40/48	
120	68	PLCC	MACH		3.9	1F1/1F1	PinSite	
12H6/-2	20	DIP	PAL		3.6	22/19	Site 40/48	
12H6/-2	20	PLCC	PAL		3.6	022/719	ChipSite	20 PIN PLCC MB
12H6/-2	20	PLCC	PAL		3.6	022/719	PinSite	
12H6/-2	20	SO	PAL		3.6	022/819	ChipSite	SOIC_30
12H6/-2	20	SO	PAL		3.6	022/819	PinSite	
12L10	24	DIP	PAL		3.6	22/01	Site 40/48	SOIC_30
12L10	24	SO	PAL		3.6	022/801	ChipSite	
12L10	24	SO	PAL		3.6	022/801	PinSite	
12L10-ML	28	LCC	PAL	44	3.6	022/901	ChipSite	28 PIN LCC MB
12L10-ML	28	LCC	PAL		3.6	022/901	PinSite	
12L10-NL	28	PLCC	PAL		3.6	022/701	ChipSite	28 PIN PLCC MB
12L10-NL	28	PLCC	PAL		3.6	022/701	PinSite	
12L6/-2	20	DIP	PAL		3.6	22/14	Site 40/48	20 PIN PLCC MB
12L6/-2	20	PLCC	PAL		3.6	022/714	ChipSite	
12L6/-2	20	PLCC	PAL		3.6	022/714	PinSite	
12L6/-2	20	SO	PAL		3.6	022/814	ChipSite	
12L6/-2	20	SO	PAL		3.6	022/814	PinSite	SOIC_30
12P4	20	DIP	PLE		2.2	18/53	Site 40/48	
12P8	24	DIP	PLE		2.2	18/63	Site 40/48	84 PIN PLCC MB
130	84	PLCC	MACH		3.9	194/0F6	PinSite	
14H4/-2	20	DIP	PAL		3.6	22/20	Site 40/48	20 PIN PLCC MB
14H4/-2	20	PLCC	PAL		3.6	022/720	ChipSite	
14H4/-2	20	PLCC	PAL		3.6	022/720	PinSite	20 PIN PLCC MB
14H4/-2	20	SO	PAL		3.6	022/820	ChipSite	
14H4/-2	20	SO	PAL		3.6	022/820	PinSite	
14L4/-2	20	DIP	PAL		3.6	22/15	Site 40/48	
14L4/-2	20	PLCC	PAL		3.6	022/715	ChipSite	20 PIN PLCC MB
14L4/-2	20	PLCC	PAL		3.6	022/715	PinSite	
14L4/-2	20	SO	PAL		3.6	022/815	ChipSite	SOIC_30
14L4/-2	20	SO	PAL		3.6	022/815	PinSite	
14L8	24	DIP	PAL		3.6	22/02	Site 40/48	SOIC_30
14L8	24	SO	PAL		3.6	022/802	ChipSite	
14L8	24	SO	PAL		3.6	022/802	PinSite	28 PIN PLCC MB
14L8-NL	28	PLCC	PAL		3.6	022/702	ChipSite	
14L8-NL	28	PLCC	PAL		3.6	022/702	PinSite	20 PIN PLCC MB
16A4	20	DIP	PAL		3.6	22/24	Site 40/48	
16A4	20	PLCC	PAL		3.6	022/724	ChipSite	20 PIN PLCC MB
16A4	20	PLCC	PAL		3.6	022/724	PinSite	
16A4	20	SO	PAL		3.6	022/824	ChipSite	SOIC_30
16A4	20	SO	PAL		3.6	022/824	PinSite	
16C1/-2	20	DIP	PAL		3.6	22/21	Site 40/48	20 PIN PLCC MB
16C1/-2	20	PLCC	PAL		3.6	022/721	ChipSite	
16C1/-2	20	PLCC	PAL		3.6	022/721	PinSite	SOIC_30
16C1/-2	20	SO	PAL		3.6	022/821	ChipSite	
16C1/-2	20	SO	PAL		3.6	022/821	PinSite	20 PIN PLCC MB
16H2/-2	20	DIP	PAL		3.6	22/22	Site 40/48	
16H2/-2	20	PLCC	PAL		3.6	022/722	ChipSite	20 PIN PLCC MB
16H2/-2	20	PLCC	PAL		3.6	022/722	PinSite	
16H2/-2	20	SO	PAL		3.6	022/822	ChipSite	SOIC_30
16H2/-2	20	SO	PAL		3.6	022/822	PinSite	
16H8	20	DIP	AMPAL		2.1	97/25	Site 40/48	Site 40/48
16HD8	20	DIP	AMPAL		2.1	97/25	Site 40/48	
16L2/-2	20	DIP	PAL		3.6	22/16	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
16L2/-2	20	PLCC	PAL		3.6	022/716	ChipSite	
16L2/-2	20	PLCC	PAL		3.6	022/716	PinSite	20 PIN PLCC MB
16L2/-2	20	SO	PAL		3.6	022/816	ChipSite	
16L2/-2	20	SO	PAL		3.6	022/816	PinSite	SOIC_30
16L6	20	SO	PAL		3.6	022/803	ChipSite	
16L6	20	SO	PAL		3.6	022/803	PinSite	SOIC_30
16L6	24	DIP	PAL		3.6	22/03	Site 40/48	
16L6-NL	28	PLCC	PAL		3.6	022/703	ChipSite	
16L6-NL	28	PLCC	PAL		3.6	022/703	PinSite	28 PIN PLCC MB
16L8-4	28	PLCC	PAL		3.9	020/7F0	PinSite	28 PIN PLCC MB
16L8-5	20	DIP	PAL	28	3.9	20/17	Site 40/48	
16L8-5	20	PLCC	PAL	28	3.9	020/717	ChipSite	
16L8-5	20	PLCC	PAL	28	3.9	020/717	PinSite	20 PIN PLCC MB
16L8-7	20	DIP	PAL		3.9	20/17	Site 40/48	
16L8-7	20	PLCC	PAL		3.9	020/717	ChipSite	
16L8-7	20	PLCC	PAL		3.9	020/717	PinSite	20 PIN PLCC MB
16L8/A/A-2/A-4	20	DIP	PAL		3.6	22/17	Site 40/48	
16L8/A/A-2/A-4	20	PLCC	PAL		3.6	022/717	ChipSite	
16L8/A/A-2/A-4	20	PLCC	PAL		3.6	022/717	PinSite	20 PIN PLCC MB
16L8/A/A-2/A-4	20	SO	PAL		3.6	022/817	ChipSite	
16L8/A/A-2/A-4	20	SO	PAL		3.6	022/817	PinSite	SOIC_30
16L8/A/B	20	DIP	AMPAL		2.1	97/17	Site 40/48	
16L8/A/B	20	LCC	AMPAL	44	2.5	097/717	ChipSite	
16L8/A/B	20	LCC	AMPAL		3.0	097/717	PinSite	20 PIN LCC MB
16L8/A/B	20	PLCC	AMPAL		1.6	097/717	ChipSite	
16L8/A/B	20	PLCC	AMPAL		3.0	097/717	PinSite	20 PIN PLCC MB
16L8B	20	DIP	PAL		3.6	30/17	Site 40/48	
16L8B	20	PLCC	PAL		3.6	030/717	ChipSite	
16L8B	20	PLCC	PAL		3.6	030/717	PinSite	20 PIN PLCC MB
16L8B	20	SO	PAL		3.6	030/817	ChipSite	
16L8B	20	SO	PAL		3.6	030/817	PinSite	SOIC_30
16L8B-2/B-4	20	DIP	PAL		3.6	22/17	Site 40/48	
16L8B-2/B-4	20	PLCC	PAL		3.6	022/717	ChipSite	
16L8B-2/B-4	20	PLCC	PAL		3.6	022/717	PinSite	20 PIN PLCC MB
16L8B-2/B-4	20	SO	PAL		3.6	022/817	ChipSite	
16L8B-2/B-4	20	SO	PAL		3.6	022/817	PinSite	SOIC_30
16L8D	20	DIP	PAL		3.6	30/17	Site 40/48	
16L8D	20	PLCC	PAL		3.6	030/717	ChipSite	
16L8D	20	PLCC	PAL		3.6	030/717	PinSite	20 PIN PLCC MB
16L8D	20	SO	PAL		3.6	030/817	ChipSite	
16L8D	20	SO	PAL		3.6	030/817	PinSite	SOIC_30
16L8D/2	20	DIP	PAL	28	3.9	20/17	Site 40/48	
16L8D/2	20	PLCC	PAL	28	3.9	020/717	ChipSite	
16L8D/2	20	PLCC	PAL	28	3.9	020/717	PinSite	20 PIN PLCC MB
16L8H-10	20	DIP	PAL		3.9	20/17	Site 40/48	
16L8H-10	20	PLCC	PAL		3.9	020/717	ChipSite	
16L8H-10	20	PLCC	PAL		3.9	020/717	PinSite	20 PIN PLCC MB
16L8H-15	20	DIP	PAL		3.6	30/17	Site 40/48	
16L8H-15	20	PLCC	PAL		3.6	030/717	ChipSite	
16L8H-15	20	PLCC	PAL		3.6	030/717	PinSite	20 PIN PLCC MB
16LD8	20	DIP	AMPAL		2.1	97/17	Site 40/48	
16P8A	20	DIP	PAL		3.6	22/30	Site 40/48	
16P8A	20	SO	PAL		3.6	022/830	ChipSite	
16P8A	20	SO	PAL		3.6	022/830	PinSite	SOIC_30
16R4-4	28	PLCC	PAL	28	3.9	020/7F1	ChipSite	
16R4-4	28	PLCC	PAL	28	3.9	020/7F1	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
16R4-5	20	DIP	PAL	28	3.9	020/081	Site 40/48	20 PIN PLCC MB
16R4-5	20	PLCC	PAL	28	3.9	020/781	ChipSite	
16R4-5	20	PLCC	PAL	28	3.9	020/781	PinSite	
16R4-7	20	DIP	PAL		3.9	020/081	Site 40/48	
16R4-7	20	PLCC	PAL		3.9	020/781	ChipSite	20 PIN PLCC MB
16R4-7	20	PLCC	PAL		3.9	020/781	PinSite	
16R4/A/A-2/A-4	20	DIP	PAL		3.6	22/24	Site 40/48	20 PIN PLCC MB
16R4/A/A-2/A-4	20	PLCC	PAL		3.6	022/724	ChipSite	
16R4/A/A-2/A-4	20	PLCC	PAL		3.6	022/724	PinSite	
16R4/A/A-2/A-4	20	SO	PAL		3.6	022/824	ChipSite	
16R4/A/A-2/A-4	20	SO	PAL		3.6	022/824	PinSite	SOIC_30
16R4/A/B	20	DIP	AMPAL	44	2.1	97/81	Site 40/48	20 PIN LCC MB
16R4/A/B	20	LCC	AMPAL		2.5	097/781	ChipSite	
16R4/A/B	20	LCC	AMPAL		3.0	097/781	PinSite	
16R4/A/B	20	PLCC	AMPAL		2.1	097/781	ChipSite	
16R4/A/B	20	PLCC	AMPAL		3.0	097/781	PinSite	20 PIN PLCC MB
16R4B	20	DIP	PAL		3.6	30/24	Site 40/48	20 PIN PLCC MB
16R4B	20	PLCC	PAL		3.6	030/724	ChipSite	
16R4B	20	PLCC	PAL		3.6	030/724	PinSite	
16R4B	20	SO	PAL		3.6	030/824	ChipSite	
16R4B	20	SO	PAL		3.6	030/824	PinSite	SOIC_30
16R4B-2/B-4	20	DIP	PAL		3.6	22/24	Site 40/48	20 PIN PLCC MB
16R4B-2/B-4	20	PLCC	PAL		3.6	022/724	ChipSite	
16R4B-2/B-4	20	PLCC	PAL		3.6	022/724	PinSite	
16R4B-2/B-4	20	SO	PAL		3.6	022/824	ChipSite	
16R4B-2/B-4	20	SO	PAL		3.6	022/824	PinSite	SOIC_30
16R4D	20	DIP	PAL		3.6	30/24	Site 40/48	20 PIN PLCC MB
16R4D	20	PLCC	PAL		3.6	030/724	ChipSite	
16R4D	20	PLCC	PAL		3.6	030/724	PinSite	
16R4D	20	SO	PAL		3.6	030/824	ChipSite	
16R4D	20	SO	PAL		3.6	030/824	PinSite	SOIC_30
16R4D/2	20	DIP	PAL	28	3.9	20/81	Site 40/48	20 PIN PLCC MB
16R4D/2	20	PLCC	PAL	28	3.9	020/781	ChipSite	
16R4D/2	20	PLCC	PAL	28	3.9	020/781	PinSite	
16R4H-10	20	DIP	PAL		3.9	020/081	Site 40/48	
16R4H-10	20	PLCC	PAL		3.9	020/781	ChipSite	20 PIN PLCC MB
16R4H-10	20	PLCC	PAL		3.9	020/781	PinSite	
16R4H-15	20	DIP	PAL		3.6	30/67	Site 40/48	20 PIN PLCC MB
16R4H-15	20	PLCC	PAL		3.6	030/767	ChipSite	
16R4H-15	20	PLCC	PAL		3.6	030/767	PinSite	20 PIN PLCC MB
16R6-4	28	PLCC	PAL	28	3.9	020/7F2	ChipSite	28 PIN PLCC MB
16R6-4	28	PLCC	PAL	28	3.9	020/7F2	PinSite	
16R6-5	20	DIP	PAL	28	3.9	020/080	Site 40/48	20 PIN PLCC MB
16R6-5	20	PLCC	PAL	28	3.9	020/780	ChipSite	
16R6-5	20	PLCC	PAL	28	3.9	020/780	PinSite	
16R6-7	20	DIP	PAL		3.9	020/080	Site 40/48	
16R6-7	20	PLCC	PAL		3.9	020/780	ChipSite	20 PIN PLCC MB
16R6-7	20	PLCC	PAL		3.9	020/780	PinSite	
16R6/A/A-2/A-4	20	DIP	PAL		3.6	22/24	Site 40/48	20 PIN PLCC MB
16R6/A/A-2/A-4	20	PLCC	PAL		3.6	022/724	ChipSite	
16R6/A/A-2/A-4	20	PLCC	PAL		3.6	022/724	PinSite	20 PIN PLCC MB
16R6/A/A-2/A-4	20	SO	PAL		3.6	022/824	ChipSite	SOIC_30
16R6/A/A-2/A-4	20	SO	PAL		3.6	022/824	PinSite	
16R6/A/B	20	DIP	AMPAL	44	2.1	97/80	Site 40/48	20 PIN LCC MB
16R6/A/B	20	LCC	AMPAL		2.5	097/780	ChipSite	
16R6/A/B	20	LCC	AMPAL		3.0	097/780	PinSite	20 PIN LCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
16R6/A/B	20	PLCC	AMPAL		2.1	097/780	ChipSite	20 PIN PLCC MB
16R6/A/B	20	PLCC	AMPAL		3.0	097/780	PinSite	
16R6B	20	DIP	PAL		3.6	30/24	Site 40/48	
16R6B	20	PLCC	PAL		3.6	030/724	ChipSite	20 PIN PLCC MB
16R6B	20	PLCC	PAL		3.6	030/724	PinSite	
16R6B	20	SO	PAL		3.6	030/824	ChipSite	
16R6B	20	SO	PAL		3.6	030/824	PinSite	SOIC_30
16R6B-2/B-4	20	DIP	PAL		3.6	22/24	Site 40/48	20 PIN PLCC MB
16R6B-2/B-4	20	PLCC	PAL		3.6	022/724	ChipSite	
16R6B-2/B-4	20	PLCC	PAL		3.6	022/724	PinSite	
16R6B-2/B-4	20	SO	PAL		3.6	022/824	ChipSite	SOIC_30
16R6B-2/B-4	20	SO	PAL		3.6	022/824	PinSite	
16R6D	20	DIP	PAL		3.6	30/24	Site 40/48	
16R6D	20	PLCC	PAL		3.6	030/724	ChipSite	20 PIN PLCC MB
16R6D	20	PLCC	PAL		3.6	030/724	PinSite	
16R6D	20	SO	PAL		3.6	030/824	ChipSite	
16R6D	20	SO	PAL		3.6	030/824	PinSite	SOIC_30
16R6D/2	20	DIP	PAL	28	3.9	20/80	Site 40/48	20 PIN PLCC MB
16R6D/2	20	PLCC	PAL	28	3.9	020/780	ChipSite	
16R6D/2	20	PLCC	PAL	28	3.9	020/780	PinSite	
16R6H-10	20	DIP	PAL		3.9	020/080	Site 40/48	20 PIN PLCC MB
16R6H-10	20	PLCC	PAL		3.9	020/780	ChipSite	
16R6H-10	20	PLCC	PAL		3.9	020/780	PinSite	
16R6H-15	20	DIP	PAL		3.6	30/67	Site 40/48	20 PIN PLCC MB
16R6H-15	20	PLCC	PAL		3.6	030/767	ChipSite	
16R6H-15	20	PLCC	PAL		3.6	030/767	PinSite	
16R8-4	28	PLCC	PAL	28	3.9	020/7F3	ChipSite	28 PIN PLCC MB
16R8-4	28	PLCC	PAL	28	3.9	020/7F3	PinSite	
16R8-5	20	DIP	PAL	28	3.9	020/082	Site 40/48	
16R8-5	20	PLCC	PAL	28	3.9	020/782	ChipSite	20 PIN PLCC MB
16R8-5	20	PLCC	PAL	28	3.9	020/782	PinSite	
16R8-7	20	DIP	PAL		3.9	020/082	Site 40/48	
16R8-7	20	PLCC	PAL		3.9	020/782	ChipSite	20 PIN PLCC MB
16R8-7	20	PLCC	PAL		3.9	020/782	PinSite	
16R8/A/A-2/A-4	20	DIP	PAL		3.6	22/24	Site 40/48	
16R8/A/A-2/A-4	20	PLCC	PAL		3.6	022/724	ChipSite	20 PIN PLCC MB
16R8/A/A-2/A-4	20	PLCC	PAL		3.6	022/724	PinSite	
16R8/A/A-2/A-4	20	SO	PAL		3.6	022/824	ChipSite	
16R8/A/A-2/A-4	20	SO	PAL		3.6	022/824	PinSite	SOIC_30
16R8/A/B	20	DIP	AMPAL		2.1	97/82	Site 40/48	20 PIN LCC MB
16R8/A/B	20	LCC	AMPAL	44	2.5	097/782	ChipSite	
16R8/A/B	20	LCC	AMPAL		3.0	097/782	PinSite	
16R8/A/B	20	PLCC	AMPAL		2.1	097/782	ChipSite	20 PIN PLCC MB
16R8/A/B	20	PLCC	AMPAL		3.0	097/782	PinSite	
16R8B	20	DIP	PAL		3.6	30/24	Site 40/48	
16R8B	20	PLCC	PAL		3.6	030/724	ChipSite	20 PIN PLCC MB
16R8B	20	PLCC	PAL		3.6	030/724	PinSite	
16R8B	20	SO	PAL		3.6	030/824	ChipSite	
16R8B	20	SO	PAL		3.6	030/824	PinSite	SOIC_30
16R8B-2/B-4	20	DIP	PAL		3.6	22/24	Site 40/48	20 PIN PLCC MB
16R8B-2/B-4	20	PLCC	PAL		3.6	022/724	ChipSite	
16R8B-2/B-4	20	PLCC	PAL		3.6	022/724	PinSite	
16R8B-2/B-4	20	SO	PAL		3.6	022/824	ChipSite	SOIC_30
16R8B-2/B-4	20	SO	PAL		3.6	022/824	PinSite	
16R8B-2/B-4	20	SO	PAL		3.6	022/824	PinSite	
16R8D	20	DIP	PAL		3.6	30/24	Site 40/48	SOIC_30
16R8D	20	PLCC	PAL		3.6	030/724	ChipSite	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
16R8D	20	PLCC	PAL		3.6	030/724	PinSite	20 PIN PLCC MB
16R8D	20	SO	PAL		3.6	030/824	ChipSite	
16R8D	20	SO	PAL		3.6	030/824	PinSite	SOIC_30
16R8D/2	20	DIP	PAL	28	3.9	20/82	Site 40/48	
16R8D/2	20	PLCC	PAL	28	3.9	020/782	ChipSite	
16R8D/2	20	PLCC	PAL	28	3.9	020/782	PinSite	20 PIN PLCC MB
16R8H-10	20	DIP	PAL		3.9	020/082	Site 40/48	
16R8H-10	20	PLCC	PAL		3.9	020/782	ChipSite	
16R8H-10	20	PLCC	PAL		3.9	020/782	PinSite	20 PIN PLCC MB
16R8H-15	20	DIP	PAL		3.6	30/67	Site 40/48	
16R8H-15	20	PLCC	PAL		3.6	030/767	ChipSite	
16R8H-15	20	PLCC	PAL		3.6	030/767	PinSite	20 PIN PLCC MB
16RA8	20	DIP	PAL		3.6	22/31	Site 40/48	
16RA8	20	PLCC	PAL		3.6	022/731	ChipSite	
16RA8	20	PLCC	PAL		3.6	022/731	PinSite	20 PIN PLCC MB
16RA8	20	SO	PAL		3.6	022/831	ChipSite	
16RA8	20	SO	PAL		3.6	022/831	PinSite	SOIC_30
16RP4A	20	DIP	PAL		3.6	22/31	Site 40/48	
16RP4A	20	PLCC	PAL		3.6	022/731	ChipSite	
16RP4A	20	PLCC	PAL		3.6	022/731	PinSite	20 PIN PLCC MB
16RP4A	20	SO	PAL		3.6	022/831	ChipSite	
16RP4A	20	SO	PAL		3.6	022/831	PinSite	SOIC_30
16RP6A	20	DIP	PAL		3.6	22/31	Site 40/48	
16RP6A	20	PLCC	PAL		3.6	022/731	ChipSite	
16RP6A	20	PLCC	PAL		3.6	022/731	PinSite	20 PIN PLCC MB
16RP6A	20	SO	PAL		3.6	022/831	ChipSite	
16RP6A	20	SO	PAL		3.6	022/831	PinSite	SOIC_30
16RP8A	20	DIP	PAL		3.6	22/31	Site 40/48	
16RP8A	20	PLCC	PAL		3.6	022/731	ChipSite	
16RP8A	20	PLCC	PAL		3.6	022/731	PinSite	20 PIN PLCC MB
16RP8A	20	SO	PAL		3.6	022/831	ChipSite	
16RP8A	20	SO	PAL		3.6	022/831	PinSite	SOIC_30
16X4	20	DIP	PAL		3.6	22/24	Site 40/48	
16X4	20	PLCC	PAL		3.6	022/724	ChipSite	
16X4	20	PLCC	PAL		3.6	022/724	PinSite	20 PIN PLCC MB
16X4	20	SO	PAL		3.6	022/824	ChipSite	
16X4	20	SO	PAL		3.6	022/824	PinSite	SOIC_30
1736	8	DIP	PROM	46	2.6	127/0EE	Site 40/48	
1736	20	PLCC	EEPROM	46	2.8	127/158	ChipSite	
1736	20	PLCC	EEPROM	46	3.0	127/158	PinSite	20 PIN PLCC MB
1765	8	DIP	PROM	46	2.8	127/151	Site 40/48	
1765	20	PLCC	EEPROM	46	2.8	127/159	ChipSite	
1765	20	PLCC	EEPROM	46	3.0	127/159	PinSite	20 PIN PLCC MB
18L4	24	DIP	PAL		3.6	22/04	Site 40/48	
18L4	24	SO	PAL		3.6	022/804	ChipSite	
18L4	24	SO	PAL		3.6	022/804	PinSite	SOIC_30
18L4-NL	28	PLCC	PAL		3.6	022/704	ChipSite	
18L4-NL	28	PLCC	PAL		3.6	022/704	PinSite	28 PIN PLCC MB
18P8	20	DIP	AMPAL		1.5	97/29	Site 40/48	
18P8	20	PLCC	AMPAL		1.5	097/729	ChipSite	
18P8	20	PLCC	AMPAL		3.0	097/729	PinSite	20 PIN PLCC MB
20C1	24	DIP	PAL		3.6	22/12	Site 40/48	
20C1-NL	28	PLCC	PAL		3.6	022/712	ChipSite	
20C1-NL	28	PLCC	PAL		3.6	022/712	PinSite	28 PIN PLCC MB
20L10	24	DIP	AMPAL		2.0	97/06	Site 40/48	
20L10	28	PLCC	AMPAL		2.5	097/706	ChipSite	

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<b>Advanced Micro Devices/MMI (continued)</b>								
20L10	28	PLCC	AMPAL	44	3.0	097/706	PinSite	28 PIN PLCC MB
20L10-ML	28	LCC	PAL		3.6	022/906	ChipSite	28 PIN LCC MB
20L10-ML	28	LCC	PAL		3.6	022/906	PinSite	
20L10/A	24	DIP	PAL		3.6	22/06	Site 40/48	SOIC_30
20L10/A	24	SO	PAL		3.6	022/806	ChipSite	
20L10/A	24	SO	PAL		3.6	022/806	PinSite	
20L10/A-FN	28	PLCC	PAL	28	3.6	022/606	ChipSite	28 PIN PLCC MB
20L10/A-FN	28	PLCC	PAL		3.6	022/606	PinSite	
20L10/A-NL	28	PLCC	PAL		3.6	022/706	ChipSite	28 PIN PLCC MB
20L10/A-NL	28	PLCC	PAL		3.6	022/706	PinSite	
20L2	24	DIP	PAL		3.6	22/05	Site 40/48	
20L2	24	SO	PAL	28	3.6	022/805	ChipSite	SOIC_30
20L2	24	SO	PAL		3.6	022/805	PinSite	
20L2-NL	28	PLCC	PAL		3.6	022/705	ChipSite	28 PIN PLCC MB
20L2-NL	28	PLCC	PAL		3.6	022/705	PinSite	
20L8	24	DIP	AMPAL		2.0	97/26	Site 40/48	
20L8-10	24	DIP	PAL	28	3.6	22/26	Site 40/48	28 PIN PLCC MB
20L8-10	28	PLCC	PAL		3.6	022/626	ChipSite	
20L8-10	28	PLCC	PAL		3.6	022/626	PinSite	28 PIN PLCC MB
20L8-10/2	24	DIP	PAL		3.9	20/26	Site 40/48	
20L8-10/2	28	PLCC	PAL		3.9	020/726	ChipSite	
20L8-10/2	28	PLCC	PAL	28	3.9	020/726	PinSite	28 PIN PLCC MB
20L8-5	24	DIP	PAL	28	3.9	020/026	Site 40/48	28 PIN PLCC MB
20L8-5	28	PLCC	PAL	28	3.9	020/726	ChipSite	
20L8-5	28	PLCC	PAL	28	3.9	020/726	PinSite	28 PIN PLCC MB
20L8-7	24	DIP	PAL	28	3.9	020/026	Site 40/48	28 PIN PLCC MB
20L8-7	28	PLCC	PAL		3.9	020/726	ChipSite	
20L8-7	28	PLCC	PAL		3.9	020/726	PinSite	20 PIN LCC MB
20L8A-ML	20	LCC	PAL		3.6	022/926	ChipSite	
20L8A-ML	20	LCC	PAL		3.6	022/926	PinSite	
20L8A/A-2/B/B-2	24	DIP	PAL	28	3.6	22/26	Site 40/48	SOIC_30
20L8A/A-2/B/B-2	24	SO	PAL		3.6	022/826	ChipSite	
20L8A/A-2/B/B-2	24	SO	PAL		3.6	022/826	PinSite	28 PIN PLCC MB
20L8A/A-2/B/FN	28	PLCC	PAL		3.6	022/626	ChipSite	
20L8A/A-2/B/FN	28	PLCC	PAL		3.6	022/626	PinSite	
20L8A/A-2/B/NL	28	PLCC	PAL	28	3.6	022/726	ChipSite	28 PIN PLCC MB
20L8A/A-2/B/NL	28	PLCC	PAL		3.6	022/726	PinSite	
20L8B-2-FN	28	PLCC	PAL		3.6	022/626	ChipSite	28 PIN PLCC MB
20L8B-2-FN	28	PLCC	PAL		3.6	022/626	PinSite	
20L8B-2-NL	28	PLCC	PAL		3.6	022/726	ChipSite	
20L8B-2-NL	28	PLCC	PAL	44	3.6	022/926	ChipSite	28 PIN LCC MB
20L8B-ML	28	LCC	PAL		3.6	022/926	PinSite	
20R4	24	DIP	AMPAL		2.0	97/27	Site 40/48	28 PIN PLCC MB
20R4-10	24	DIP	PAL		3.6	22/68	Site 40/48	
20R4-10	28	PLCC	PAL		3.6	022/768	ChipSite	
20R4-10	28	PLCC	PAL	28	3.6	022/768	PinSite	28 PIN PLCC MB
20R4-10/2	24	DIP	PAL		3.9	20/65	Site 40/48	
20R4-10/2	28	PLCC	PAL		3.9	020/765	ChipSite	28 PIN PLCC MB
20R4-10/2	28	PLCC	PAL		3.9	020/765	PinSite	
20R4-5	24	DIP	PAL		3.9	020/065	Site 40/48	
20R4-5	28	PLCC	PAL	28	3.9	020/765	ChipSite	28 PIN PLCC MB
20R4-5	28	PLCC	PAL	28	3.9	020/765	PinSite	
20R4-7	24	DIP	PAL	28	3.9	020/065	Site 40/48	28 PIN PLCC MB
20R4-7	28	PLCC	PAL		3.9	020/765	ChipSite	
20R4-7	28	PLCC	PAL	28	3.9	020/765	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
20R4A-ML	28	LCC	PAL		3.6	022/926	ChipSite	28 PIN LCC MB
20R4A-ML	28	LCC	PAL		3.6	022/926	PinSite	
20R4A/A-2/B/B-2	24	DIP	PAL		3.6	22/27	Site 40/48	SOIC_30
20R4A/A-2/B/B-2	24	SO	PAL		3.6	022/827	ChipSite	
20R4A/A-2/B/B-2	24	SO	PAL		3.6	022/827	PinSite	
20R4A/A-2/B/FN	28	PLCC	PAL		3.6	022/627	ChipSite	
20R4A/A-2/B/FN	28	PLCC	PAL		3.6	022/627	PinSite	28 PIN PLCC MB
20R4A/A-2/B/NL	28	PLCC	PAL		3.6	022/727	ChipSite	28 PIN PLCC MB
20R4A/A-2/B/NL	28	PLCC	PAL		3.6	022/727	PinSite	
20R4B-2-FN	28	PLCC	PAL		3.6	022/627	ChipSite	28 PIN PLCC MB
20R4B-2-FN	28	PLCC	PAL		3.6	022/627	PinSite	
20R4B-2-NL	28	PLCC	PAL		3.6	022/727	ChipSite	28 PIN PLCC MB
20R4B-2-NL	28	PLCC	PAL		3.6	022/727	PinSite	
20R4B-ML	28	LCC	PAL	44	3.6	022/927	ChipSite	28 PIN LCC MB
20R4B-ML	28	LCC	PAL		3.6	022/927	PinSite	
20R6	24	DIP	AMPAL		2.0	97/27	Site 40/48	
20R6-10	24	DIP	PAL		3.6	22/68	Site 40/48	28 PIN PLCC MB
20R6-10	28	PLCC	PAL		3.6	022/768	ChipSite	
20R6-10	28	PLCC	PAL		3.6	022/768	PinSite	
20R6-10/2	24	DIP	PAL	28	3.9	20/66	Site 40/48	
20R6-10/2	28	PLCC	PAL	28	3.9	020/766	ChipSite	28 PIN PLCC MB
20R6-10/2	28	PLCC	PAL	28	3.9	020/766	PinSite	
20R6-5	24	DIP	PAL	28	3.9	020/066	Site 40/48	28 PIN PLCC MB
20R6-5	28	PLCC	PAL	28	3.9	020/766	ChipSite	
20R6-5	28	PLCC	PAL	28	3.9	020/766	PinSite	28 PIN PLCC MB
20R6-7	24	DIP	PAL		3.9	020/066	Site 40/48	
20R6-7	28	PLCC	PAL		3.9	020/766	ChipSite	28 PIN PLCC MB
20R6-7	28	PLCC	PAL		3.9	020/766	PinSite	
20R6A-ML	20	LCC	PAL		3.6	022/926	ChipSite	20 PIN LCC MB
20R6A-ML	20	LCC	PAL		3.6	022/926	PinSite	
20R6A/A-2/B/B-2	24	DIP	PAL		3.6	22/27	Site 40/48	SOIC_30
20R6A/A-2/B/B-2	24	SO	PAL		3.6	022/827	ChipSite	
20R6A/A-2/B/B-2	24	SO	PAL		3.6	022/827	PinSite	28 PIN PLCC MB
20R6A/A-2/B/FN	28	PLCC	PAL		3.6	022/627	ChipSite	
20R6A/A-2/B/FN	28	PLCC	PAL		3.6	022/627	PinSite	28 PIN PLCC MB
20R6A/A-2/B/NL	28	PLCC	PAL		3.6	022/727	ChipSite	
20R6A/A-2/B/NL	28	PLCC	PAL		3.6	022/727	PinSite	28 PIN PLCC MB
20R6B-2-FN	28	PLCC	PAL		3.6	022/627	ChipSite	
20R6B-2-FN	28	PLCC	PAL		3.6	022/627	PinSite	28 PIN PLCC MB
20R6B-2-NL	28	PLCC	PAL		3.6	022/727	ChipSite	
20R6B-2-NL	28	PLCC	PAL		3.6	022/727	PinSite	28 PIN LCC MB
20R6B-ML	28	LCC	PAL	44	3.6	022/927	ChipSite	
20R6B-ML	28	LCC	PAL		3.6	022/927	PinSite	28 PIN PLCC MB
20R8	24	DIP	AMPAL		2.0	97/27	Site 40/48	
20R8-10	24	DIP	PAL		3.6	22/68	Site 40/48	28 PIN PLCC MB
20R8-10	28	PLCC	PAL		3.6	022/768	ChipSite	
20R8-10	28	PLCC	PAL		3.6	022/768	PinSite	28 PIN PLCC MB
20R8-10/2	24	DIP	PAL	28	3.9	20/68	Site 40/48	
20R8-10/2	28	PLCC	PAL	28	3.9	020/768	ChipSite	28 PIN PLCC MB
20R8-10/2	28	PLCC	PAL	28	3.9	020/768	PinSite	
20R8-5	24	DIP	PAL	28	3.9	020/068	Site 40/48	28 PIN PLCC MB
20R8-5	28	PLCC	PAL	28	3.9	020/768	ChipSite	
20R8-5	28	PLCC	PAL	28	3.9	020/768	PinSite	28 PIN PLCC MB
20R8-7	24	DIP	PAL		3.9	020/068	Site 40/48	
20R8-7	28	PLCC	PAL		3.9	020/768	ChipSite	28 PIN PLCC MB
20R8-7	28	PLCC	PAL		3.9	020/768	PinSite	

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20R8A-ML	20	LCC	PAL		3.6	022/926	ChipSite	20 PIN LCC MB
20R8A-ML	20	LCC	PAL		3.6	022/926	PinSite	
20R8A/A-2/B/B-2	24	DIP	PAL		3.6	22/27	Site 40/48	SOIC_30
20R8A/A-2/B/B-2	24	SO	PAL		3.6	022/827	ChipSite	
20R8A/A-2/B/B-2	24	SO	PAL		3.6	022/827	PinSite	
20R8A/A-2/B/FN	28	PLCC	PAL		3.6	022/627	ChipSite	
20R8A/A-2/B/FN	28	PLCC	PAL		3.6	022/627	PinSite	28 PIN PLCC MB
20R8A/A-2/B/NL	28	PLCC	PAL		3.6	022/727	ChipSite	28 PIN PLCC MB
20R8A/A-2/B/NL	28	PLCC	PAL		3.6	022/727	PinSite	
20R8B-2-FN	28	PLCC	PAL		3.6	022/627	ChipSite	28 PIN PLCC MB
20R8B-2-FN	28	PLCC	PAL		3.6	022/627	PinSite	
20R8B-2-NL	28	PLCC	PAL		3.6	022/727	ChipSite	28 PIN PLCC MB
20R8B-2-NL	28	PLCC	PAL		3.6	022/727	PinSite	
20R8B-ML	28	LCC	PAL	44	3.6	022/927	ChipSite	28 PIN LCC MB
20R8B-ML	28	LCC	PAL		3.6	022/927	PinSite	
20RA10	24	DIP	PAL		3.6	22/45	Site 40/48	SOIC_30
20RA10	24	SO	PAL		3.6	022/845	ChipSite	
20RA10	24	SO	PAL		3.6	022/845	PinSite	28 PIN PLCC MB
20RA10-FN	28	PLCC	PAL		3.6	022/645	ChipSite	
20RA10-FN	28	PLCC	PAL		3.6	022/645	PinSite	
20RA10-NL	28	PLCC	PAL		3.6	022/745	ChipSite	
20RA10-NL	28	PLCC	PAL		3.6	022/745	PinSite	28 PIN PLCC MB
20RP10	24	DIP	AMPAL		2.0	97/9F	Site 40/48	SOIC_30
20RP4	24	DIP	AMPAL		2.0	97/9C	Site 40/48	
20RP6	24	DIP	AMPAL		2.0	97/9D	Site 40/48	
20RP8	24	DIP	AMPAL		2.0	97/9E	Site 40/48	
20RS10	24	DIP	PAL		3.6	22/44	Site 40/48	SOIC_30
20RS10	24	SO	PAL		3.6	022/844	ChipSite	
20RS10	24	SO	PAL		3.6	022/844	PinSite	28 PIN PLCC MB
20RS10-NL	28	PLCC	PAL		3.6	022/744	ChipSite	
20RS10-NL	28	PLCC	PAL		3.6	022/744	PinSite	SOIC_30
20RS4	24	DIP	PAL		3.6	22/46	Site 40/48	
20RS4	24	SO	PAL		3.6	022/846	ChipSite	SOIC_30
20RS4	24	SO	PAL		3.6	022/846	PinSite	
20RS4-NL	28	PLCC	PAL		3.6	022/746	ChipSite	28 PIN PLCC MB
20RS4-NL	28	PLCC	PAL		3.6	022/746	PinSite	
20RS8	24	DIP	PAL		3.6	22/44	Site 40/48	SOIC_30
20RS8	24	SO	PAL		3.6	022/844	ChipSite	
20RS8	24	SO	PAL		3.6	022/844	PinSite	28 PIN PLCC MB
20RS8-NL	28	PLCC	PAL		3.6	022/744	ChipSite	
20RS8-NL	28	PLCC	PAL		3.6	022/744	PinSite	SOIC_30
20S10	24	DIP	PAL		3.6	22/43	Site 40/48	
20S10	24	SO	PAL		3.6	022/843	ChipSite	SOIC_30
20S10	24	SO	PAL		3.6	022/843	PinSite	
20S10-NL	28	PLCC	PAL		3.6	022/743	ChipSite	28 PIN PLCC MB
20S10-NL	28	PLCC	PAL		3.6	022/743	PinSite	
20X10	24	DIP	PAL		3.6	22/23	Site 40/48	SOIC_30
20X10	24	SO	PAL		3.6	022/823	ChipSite	
20X10	24	SO	PAL		3.6	022/823	PinSite	28 PIN LCC MB
20X10-ML	28	LCC	PAL	44	3.6	022/923	ChipSite	
20X10-ML	28	LCC	PAL		3.6	022/923	PinSite	28 PIN PLCC MB
20X10-NL	28	PLCC	PAL		3.6	022/723	ChipSite	
20X10-NL	28	PLCC	PAL		3.6	022/723	PinSite	SOIC_30
20X10A	24	DIP	PAL		3.6	22/36	Site 40/48	
20X10A	24	SO	PAL		3.6	022/836	ChipSite	SOIC_30
20X10A	24	SO	PAL		3.6	022/836	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
20X10A-FN	28	PLCC	PAL		3.6	022/636	ChipSite	
20X10A-FN	28	PLCC	PAL		3.6	022/636	PinSite	28 PIN PLCC MB
20X10A-NL	28	PLCC	PAL		3.6	022/736	ChipSite	
20X10A-NL	28	PLCC	PAL		3.6	022/736	PinSite	28 PIN PLCC MB
20X4	24	DIP	PAL		3.6	22/23	Site 40/48	
20X4	24	SO	PAL		3.6	022/823	ChipSite	
20X4	24	SO	PAL		3.6	022/823	PinSite	SOIC_30
20X4-ML	28	LCC	PAL	44	3.6	022/923	ChipSite	
20X4-ML	28	LCC	PAL		3.6	022/923	PinSite	28 PIN LCC MB
20X4-NL	28	PLCC	PAL		3.6	022/723	ChipSite	
20X4-NL	28	PLCC	PAL		3.6	022/723	PinSite	28 PIN PLCC MB
20X4A	24	DIP	PAL		3.6	22/36	Site 40/48	
20X4A	24	SO	PAL		3.6	022/836	ChipSite	
20X4A	24	SO	PAL		3.6	022/836	PinSite	SOIC_30
20X4A-FN	28	PLCC	PAL		3.6	022/636	ChipSite	
20X4A-FN	28	PLCC	PAL		3.6	022/636	PinSite	28 PIN PLCC MB
20X4A-NL	28	PLCC	PAL		3.6	022/736	ChipSite	
20X4A-NL	28	PLCC	PAL		3.6	022/736	PinSite	28 PIN PLCC MB
20X8	24	DIP	PAL		3.6	22/23	Site 40/48	
20X8	24	SO	PAL		3.6	022/823	ChipSite	
20X8	24	SO	PAL		3.6	022/823	PinSite	SOIC_30
20X8-ML	28	LCC	PAL	44	3.6	022/923	ChipSite	
20X8-ML	28	LCC	PAL		3.6	022/923	PinSite	28 PIN LCC MB
20X8-NL	28	PLCC	PAL		3.6	022/723	ChipSite	
20X8-NL	28	PLCC	PAL		3.6	022/723	PinSite	28 PIN PLCC MB
20X8A	24	DIP	PAL		3.6	22/36	Site 40/48	
20X8A	24	SO	PAL		3.6	022/836	ChipSite	
20X8A	24	SO	PAL		3.6	022/836	PinSite	SOIC_30
20X8A-FN	28	PLCC	PAL		3.6	022/636	ChipSite	
20X8A-FN	28	PLCC	PAL		3.6	022/636	PinSite	28 PIN PLCC MB
20X8A-NL	28	PLCC	PAL		3.6	022/736	ChipSite	
20X8A-NL	28	PLCC	PAL		3.6	022/736	PinSite	28 PIN PLCC MB
20XRP10	24	DIP	AMPAL		2.0	97/9F	Site 40/48	
20XRP4	24	DIP	AMPAL		2.0	97/9C	Site 40/48	
20XRP6	24	DIP	AMPAL		2.0	97/9D	Site 40/48	
20XRP8	24	DIP	AMPAL		2.0	97/9E	Site 40/48	
210	44	PLCC	MACH		3.9	194/0C1	ChipSite	
210	44	PLCC	MACH		3.9	194/0C1	PinSite	44 PIN PLCC MB
215	44	PLCC	MACH		3.9	194/3F1	PinSite	44 PIN PLCC MB
220	68	PLCC	MACH		3.9	194/2F1	PinSite	68 PIN PLCC MB
22IP6	24	DIP	PAL		3.6	22/6A	Site 40/48	
22IP6	24	PLCC	PAL		3.6	022/76A	PinSite	28 PIN PLCC MB
22P10	24	DIP	AMPAL		2.0	97/2B	Site 40/48	
22P10	28	PLCC	AMPAL		2.5	097/72B	ChipSite	
22P10	28	PLCC	AMPAL		3.0	097/72B	PinSite	28 PIN PLCC MB
22RX8/A	24	DIP	PAL		3.6	22/78	Site 40/48	
22RX8/A	24	SO	PAL		3.6	022/878	ChipSite	
22RX8/A	24	SO	PAL		3.6	022/878	PinSite	SOIC_30
22RX8/A-FN	28	PLCC	PAL		3.6	022/778	ChipSite	
22RX8/A-FN	28	PLCC	PAL		3.6	022/778	PinSite	28 PIN PLCC MB
22RX8/A-NL	28	PLCC	PAL		3.6	022/678	ChipSite	
22RX8/A-NL	28	PLCC	PAL		3.6	022/678	PinSite	28 PIN PLCC MB
22V10-10/-15	24	DIP	PAL		3.1	97/28	Site 40/48	
22V10-10/-15	28	PLCC	PAL		3.1	097/728	ChipSite	
22V10-10/-15	28	PLCC	PAL		3.1	097/728	PinSite	28 PIN PLCC MB
22V10/A/B	24	DIP	AMPAL		2.0	97/28	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family / Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
22V10/A/B	28	LCC	AMPAL	44	2.5	097/728	ChipSite	28 PIN LCC MB
22V10/A/B	28	LCC	AMPAL		3.0	097/728	PinSite	
22V10/A/B	28	PLCC	AMPAL		2.0	097/728	ChipSite	
22V10/A/B	28	PLCC	AMPAL		3.0	097/728	PinSite	
22XP10	24	DIP	AMPAL	44	2.0	97/2B	Site 40/48	28 PIN PLCC MB
230	84	LCC	MACH		3.9	194/1F2	PinSite	
230	84	PLCC	MACH		3.9	194/1F2	PinSite	
23S8	20	DIP	AMPAL		2.2	97/84	Site 40/48	
2708	24	DIP	EPROM	44	2.0	21/27	SetSite	84 PIN PLCC MB
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
27128	28	DIP	EPROM		1.7	AF/51	Site 40/48	
27128	28	DIP	EPROM		2.0	AF/51	SetSite	
27128A	28	DIP	EPROM	44	1.7	C1/51	Site 40/48	84 PIN PLCC MB
27128A	28	DIP	EPROM		2.1	C1/51	SetSite	
27128AP	28	DIP	EPROM		1.7	D6/51	Site 40/48	
27128AP	28	DIP	EPROM		2.0	D6/51	SetSite	
2716	24	DIP	EPROM	44	2.0	19/23	SetSite	84 PIN PLCC MB
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
2716B	24	DIP	EPROM		2.5	C2/23	SetSite	
2716B	24	DIP	EPROM		2.5	C2/23	Site 40/48	
27256	28	DIP	EPROM	44	2.1	C1/32	SetSite	84 PIN PLCC MB
27256	28	DIP	EPROM		2.1	C1/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM	44	2.0	27/24	SetSite	84 PIN PLCC MB
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
2732B	24	DIP	EPROM		2.5	C2/24	SetSite	
2732B	24	DIP	EPROM		2.5	C2/24	Site 40/48	
27512	28	DIP	EPROM	44	2.4	DD/A4	SetSite	84 PIN PLCC MB
27512	28	DIP	EPROM		2.4	DD/A4	Site 40/48	
2764	28	DIP	EPROM		1.5	AF/33	Site 40/48	
2764	28	DIP	EPROM		1.5	AF/33	SetSite	
2764	32	LCC	EPROM	44	2.6	AF/C1	ChipSite	32 PIN LCC MB
2764	32	LCC	EPROM		3.0	AF/C1	PinSite	
2764A	28	DIP	EPROM		2.1	C1/33	SetSite	
2764A	28	DIP	EPROM		2.1	C1/33	Site 40/48	
2764AP	28	DIP	EPROM	44	1.5	D6/33	Site 40/48	32 PIN LCC MB
2764AP	28	DIP	EPROM		2.0	D6/33	SetSite	
27C010	32	DIP	EPROM		3.8	D6/CB	SetSite	
27C010	32	DIP	EPROM		3.8	D6/CB	Site 40/48	
27C010	32	LCC	EPROM	44	3.8	0D6/0DE	ChipSite	32 PIN PLCC MB
27C010	32	LCC	EPROM		3.8	0D6/0DE	PinSite	
27C010	32	PLCC	EPROM		3.8	0D6/0DE	ChipSite	
27C010	32	PLCC	EPROM		3.8	0D6/0DE	PinSite	
27C020	32	DIP	EPROM	44	3.8	D6/F5	SetSite	32 PIN LCC MB
27C020	32	DIP	EPROM		3.8	D6/F5	Site 40/48	
27C020	32	LCC	EPROM		3.8	0D6/12D	ChipSite	
27C020	32	LCC	EPROM		3.8	0D6/12D	PinSite	
27C040	32	DIP	EPROM	44	3.9	D6/F6	SetSite	32 PIN LCC MB
27C040	32	DIP	EPROM		3.9	D6/F6	Site 40/48	
27C100	32	DIP	EPROM		3.8	D6/CC	SetSite	
27C100	32	DIP	EPROM		3.8	D6/CC	Site 40/48	
27C1024	40	DIP	EPROM	44	3.8	5F/A8	SetSite	44 PIN LCC MB
27C1024	40	DIP	EPROM		3.8	5F/A8	Site 40/48	
27C1024	44	LCC	EPROM		3.8	5F/88	ChipSite	
27C1024	44	LCC	EPROM		3.8	5F/88	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
27C1024	44	PLCC	EPROM		3.8	5F/88	ChipSite	44 PIN PLCC MB
27C1024	44	PLCC	EPROM		3.8	5F/88	PinSite	
27C128	28	DIP	EPROM		3.8	D6/51	SetSite	
27C128	28	DIP	EPROM		3.8	D6/51	Site 40/48	32 PIN LCC MB
27C128	32	LCC	EPROM	44	3.8	D6/C2	ChipSite	
27C128	32	LCC	EPROM		3.8	D6/C2	PinSite	
27C128	32	PLCC	EPROM		3.8	D6/C2	ChipSite	32 PIN PLCC MB
27C128	32	PLCC	EPROM		3.8	D6/C2	PinSite	
27C191	24	DIP	PROM		2.2	EA/21	SetSite	
27C191	24	DIP	PROM		2.2	EA/21	Site 40/48	44 PIN LCC MB
27C2048	40	DIP	EPROM		3.8	5F/DF	SetSite	
27C2048	40	DIP	EPROM		3.8	5F/DF	Site 40/48	
27C2048	44	LCC	EPROM		3.8	05F/173	ChipSite	44 PIN PLCC MB
27C2048	44	LCC	EPROM		3.8	05F/173	PinSite	
27C2048	44	PLCC	EPROM		3.8	05F/173	ChipSite	
27C2048	44	PLCC	EPROM		3.8	05F/173	PinSite	32 PIN LCC MB
27C256	28	DIP	EPROM		3.8	5C/32	SetSite	
27C256	28	DIP	EPROM		3.8	5C/32	Site 40/48	
27C256	32	LCC	EPROM	44	3.8	5C/C3	ChipSite	32 PIN PLCC MB
27C256	32	LCC	EPROM		3.8	5C/C3	PinSite	
27C256	32	PLCC	EPROM		3.8	5C/C3	ChipSite	
27C256	32	PLCC	EPROM		3.8	5C/C3	PinSite	44 PIN LCC MB
27C291	24	DIP	PROM		2.2	EA/21	SetSite	
27C291	24	DIP	PROM		2.2	EA/21	Site 40/48	
27C400	40	DIP	EPROM		3.9	05F/172	Site 40/48	32 PIN LCC MB
27C4096	40	DIP	EPROM		3.9	5F/89	Site 40/48	
27C43	24	DIP	PROM		2.7	EA/63	Site 40/48	
27C43	24	DIP	PROM		3.0	EA/63	SetSite	38
27C45	28	DIP	PROM		2.7	EA/77	Site 40/48	
27C49	24	DIP	PROM		2.2	EA/67	SetSite	
27C49	24	DIP	PROM		2.2	EA/67	Site 40/48	44
27C51	28	DIP	PROM		2.5	129/120	SetSite	
27C51	28	DIP	PROM		2.5	129/120	Site 40/48	
27C512	28	DIP	EPROM		3.8	5E/A4	SetSite	32 PIN LCC MB
27C512	28	DIP	EPROM		3.8	5E/A4	Site 40/48	
27C512	32	LCC	EPROM	44	3.8	5E/C4	ChipSite	
27C512	32	LCC	EPROM		3.8	5E/C4	PinSite	32 PIN PLCC MB
27C512	32	PLCC	EPROM		3.8	5E/C4	ChipSite	
27C512	32	PLCC	EPROM		3.8	5E/C4	PinSite	
27C64	28	DIP	EPROM		3.8	D6/33	SetSite	44
27C64	28	DIP	EPROM		3.8	D6/33	Site 40/48	
27C64	32	LCC	EPROM	44	3.8	D6/C1	ChipSite	
27C64	32	LCC	EPROM		3.8	D6/C1	PinSite	32 PIN LCC MB
27C64	32	PLCC	EPROM		3.8	D6/C1	ChipSite	
27C64	32	PLCC	EPROM		3.8	D6/C1	PinSite	
27H010	32	DIP	EPROM		3.8	D6/CB	SetSite	32 PIN PLCC MB
27H010	32	DIP	EPROM		3.8	D6/CB	Site 40/48	
27H256	28	DIP	EPROM		3.8	1DF/032	Site 40/48	
27LS18	16	DIP	PROM		2.2	16/02	Site 40/48	32 PIN LCC MB
27LS184	18	DIP	PROM		2.2	16/06	Site 40/48	
27LS185	18	DIP	PROM		2.2	16/06	Site 40/48	
27LS19	16	DIP	PROM		2.2	16/02	Site 40/48	32 PIN PLCC MB
27LV020	32	DIP	FLASH		3.6	1DD/170	Site 40/48	
27LV020	32	PLCC	FLASH		3.6	1DD/177	ChipSite	
27LV020	32	PLCC	FLASH		3.6	1DD/177	PinSite	32 PIN PLCC MB
27LV512	32	DIP	FLASH		3.6	1DD/117	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
27LV512	32	PLCC	FLASH		3.6	1DD/129	ChipSite	32 PIN PLCC MB
27LV512	32	PLCC	FLASH		3.6	1DD/129	PinSite	
27PS181	24	DIP	PROM		2.2	16/37	Site 40/48	
27PS184	18	DIP	PROM		2.2	16/06	Site 40/48	
27PS185	18	DIP	PROM		2.2	16/06	Site 40/48	
27PS191	24	DIP	PROM		2.2	16/68	Site 40/48	
27PS281	24	DIP	PROM		2.2	16/37	Site 40/48	20 PIN PLCC MB
27PS291	24	DIP	PROM		2.2	16/68	Site 40/48	
27PS41	20	DIP	PROM		2.2	16/53	Site 40/48	
27S12	16	DIP	PROM		2.2	16/03	Site 40/48	
27S13	16	DIP	PROM		2.2	16/03	Site 40/48	
27S13	20	PLCC	PROM		2.2	16/6D	ChipSite	20 PIN PLCC MB
27S13	20	PLCC	PROM		3.0	16/6D	PinSite	
27S15	24	DIP	PROM		2.2	16/79	Site 40/48	
27S18	16	DIP	PROM		2.2	16/02	Site 40/48	
27S180	24	DIP	PROM		2.2	16/37	Site 40/48	
27S181	24	DIP	PROM		2.2	16/37	Site 40/48	28 PIN PLCC MB
27S184	18	DIP	PROM		2.2	16/06	Site 40/48	
27S185	18	DIP	PROM		2.2	16/06	Site 40/48	
27S185	28	PLCC	PROM		2.2	16/6F	ChipSite	
27S185	28	PLCC	PROM		3.0	16/6F	PinSite	
27S19	16	DIP	PROM		2.2	16/02	Site 40/48	20 PIN PLCC MB
27S19	20	PLCC	PROM		2.2	16/6C	ChipSite	
27S19	20	PLCC	PROM		3.0	16/6C	PinSite	
27S190	24	DIP	PROM		2.2	16/68	Site 40/48	
27S191	24	DIP	PROM		2.2	16/68	Site 40/48	
27S191	28	PLCC	PROM		2.2	016/768	ChipSite	28 PIN PLCC MB
27S191	28	PLCC	PROM		3.0	016/768	PinSite	
27S20	16	DIP	PROM		2.2	16/01	Site 40/48	
27S21	16	DIP	PROM		2.2	16/01	Site 40/48	
27S21	20	PLCC	PROM		2.2	16/6B	ChipSite	
27S21	20	PLCC	PROM		3.0	16/6B	PinSite	20 PIN PLCC MB
27S23/A	20	DIP	PROM		3.6	016/1D0	Site 40/48	
27S25	24	DIP	PROM		2.2	16/65	Site 40/48	
27S25	28	PLCC	PROM		2.2	16/8F	ChipSite	
27S25	28	PLCC	PROM		3.0	16/8F	PinSite	
27S26	22	DIP	PROM		2.2	16/85	Site 40/48	28 PIN PLCC MB
27S27	22	DIP	PROM		2.2	16/85	Site 40/48	
27S28	20	DIP	PROM		2.2	16/09	Site 40/48	
27S280	24	DIP	PROM		2.2	16/37	Site 40/48	
27S281	24	DIP	PROM		2.2	16/37	Site 40/48	
27S281	28	PLCC	PROM		2.2	16/F3	ChipSite	28 PIN PLCC MB
27S281	28	PLCC	PROM		3.0	16/F3	PinSite	
27S29	20	DIP	PROM		2.2	16/09	Site 40/48	
27S29	20	LCC	PROM	44	2.7	16/7C	ChipSite	20 PIN LCC MB
27S29	20	LCC	PROM		3.0	16/7C	PinSite	
27S290	24	DIP	PROM		2.2	16/68	Site 40/48	
27S291	24	DIP	PROM		2.2	16/68	Site 40/48	
27S30	24	DIP	PROM		2.2	16/36	Site 40/48	
27S31	24	DIP	PROM		2.2	16/36	Site 40/48	28 PIN LCC MB
27S31	28	LCC	PROM	44	2.7	016/736	ChipSite	
27S31	28	LCC	PROM		3.0	016/736	PinSite	
27S32	18	DIP	PROM		2.2	16/38	Site 40/48	
27S33	18	DIP	PROM		2.2	16/38	Site 40/48	
27S33	20	PLCC	PROM		2.2	016/738	ChipSite	20 PIN PLCC MB
27S33	20	PLCC	PROM		3.0	016/738	PinSite	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
27S35	24	DIP	PROM	1	2.2	16/66	Site 40/48	28 PIN PLCC MB
27S35	28	PLCC	PROM	1	2.2	016/766	ChipSite	
27S35	28	PLCC	PROM	1	3.0	016/766	PinSite	
27S37	24	DIP	PROM	1	2.2	16/66	Site 40/48	
27S40	20	DIP	PROM		2.2	16/53	Site 40/48	
27S41	20	DIP	PROM		2.2	16/53	Site 40/48	
27S43	24	DIP	PROM		2.2	16/63	Site 40/48	28 PIN PLCC MB
27S45	24	DIP	PROM	3	2.3	16/77	Site 40/48	
27S45	28	PLCC	PROM	3	2.3	016/777	ChipSite	
27S45	28	PLCC	PROM	3	3.0	016/777	PinSite	
27S45A	28	PLCC	PROM	3	3.1	016/777	ChipSite	
27S45A	28	PLCC	PROM	3	3.1	016/777	PinSite	28 PIN PLCC MB
27S45A-L32	32	LCC	PROM	3	3.0	016/166	PinSite	32 PIN LCC MB
27S45A-L32	32	LCC	PROM	3,44	3.0	016/166	ChipSite	
27S45SA	24	DIP	PROM	3,19	2.3	16/77	Site 40/48	
27S45SA	28	PLCC	PROM	3,19	2.5	016/777	ChipSite	
27S45SA	28	PLCC	PROM	3,19	3.0	016/777	PinSite	28 PIN PLCC MB
27S45SA-L28	28	LCC	PROM	3,19	3.0	016/777	PinSite	28 PIN LCC MB
27S45SA-L28	28	LCC	PROM	3,19,44	2.8	016/777	ChipSite	
27S45SA-L32	32	LCC	PROM	3,19	3.0	016/166	PinSite	32 PIN LCC MB
27S45SA-L32	32	LCC	PROM	3,19,44	3.0	016/166	ChipSite	
27S47	24	DIP	PROM	3	2.3	16/77	Site 40/48	28 PIN LCC MB
27S49	24	DIP	PROM		2.4	16/67	Site 40/48	
27S49A	24	DIP	PROM		3.1	16/67	Site 40/48	
27S49A/B-L28	28	LCC	PROM	44	3.3	16/9A	ChipSite	
27S49A/B-L28	28	LCC	PROM		3.3	16/9A	PinSite	
27S49SA	24	DIP	PROM	19	2.3	16/67	Site 40/48	
27S51	28	DIP	PROM		2.2	16/78	Site 40/48	28 PIN PLCC MB
27S65	24	DIP	PROM	1	2.1	16/93	Site 40/48	
27S65	28	PLCC	PROM	1	2.1	16/F0	ChipSite	
27S65	28	PLCC	PROM	1	3.0	16/F0	PinSite	
27S75	24	DIP	PROM	1	1.7	16/94	Site 40/48	
27S85	24	DIP	PROM	1	2.1	16/95	Site 40/48	
27S85	28	PLCC	PROM	1	2.1	16/F2	ChipSite	28 PIN PLCC MB
27S85	28	PLCC	PROM	1	3.0	16/F2	PinSite	
2817A	28	DIP	EEPROM		2.5	BF/A2	SetSite	
2817A	28	DIP	EEPROM		2.5	BF/A2	Site 40/48	
2864A	28	DIP	EEPROM		2.0	CA/A6	Site 40/48	
2864A	28	DIP	EEPROM		2.8	CA/A6	SetSite	
2864AE	28	DIP	EEPROM		2.8	114/098	SetSite	28 PIN LCC MB
2864AE	28	DIP	EEPROM		2.8	114/098	Site 40/48	
2864B	28	DIP	EEPROM		2.0	CA/A6	Site 40/48	
2864B	28	DIP	EEPROM		2.8	CA/A6	SetSite	
2864B	28	LCC	EEPROM	44	2.0	0CA/7A6	ChipSite	
2864B	28	LCC	EEPROM		3.0	0CA/7A6	PinSite	
2864BE	28	DIP	EEPROM		2.2	114/0A6	SetSite	32 PIN LCC MB
2864BE	28	DIP	EEPROM		2.2	114/0A6	Site 40/48	
28F010	32	DIP	FLASH		3.8	135/118	Site 40/48	
28F010	32	LCC	FLASH	44	3.8	135/12A	ChipSite	
28F010	32	LCC	FLASH		3.8	135/12A	PinSite	
28F010	32	PLCC	FLASH		3.8	135/12A	ChipSite	
28F010	32	PLCC	FLASH		3.8	135/12A	PinSite	32 PIN PLCC MB
28F010	32	TSOP	FLASH		3.9	135/B18	PinSite	PPI-0702
28F010(R)	32	TSOP	FLASH		3.9	135/C18	PinSite	PPI-0702
28F020	32	DIP	FLASH		3.8	186/170	Site 40/48	
28F020	32	PLCC	FLASH		3.8	186/177	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
28F020	32	PLCC	FLASH		3.8	186/177	PinSite	32 PIN PLCC MB
28F256	32	DIP	FLASH		3.8	135/10A	Site 40/48	
28F256	32	PLCC	FLASH		3.8	135/112	ChipSite	
28F256	32	PLCC	FLASH		3.8	135/112	PinSite	32 PIN PLCC MB
28F512	32	DIP	FLASH		3.8	135/117	Site 40/48	
28F512	32	PLCC	FLASH		3.8	135/129	ChipSite	
28F512	32	PLCC	FLASH		3.8	135/129	PinSite	32 PIN PLCC MB
28F512-P1	32	LCC	FLASH	44	3.8	135/129	ChipSite	
28F512-P1	32	LCC	FLASH		3.8	135/129	PinSite	32 PIN LCC MB
2971	24	DIP	PEG		1.5	97/78	Site 40/48	
29774	22	DIP	PROM		2.2	16/85	Site 40/48	
29CPL141	28	DIP	FPC	28	2.4	94/7C	Site 40/48	
29CPL142	28	DIP	FPC	28	2.6	94/7D	Site 40/48	
29CPL144	28	DIP	FPC	28	2.4	94/7E	Site 40/48	
29CPL151	28	DIP	FPC	28	2.4	94/7C	Site 40/48	
29CPL151	28	PLCC	FPC	28	2.8	094/77C	ChipSite	
29CPL151	28	PLCC	FPC	28	3.0	094/77C	PinSite	28 PIN PLCC MB
29CPL152	28	DIP	FPC	28	2.6	94/7D	Site 40/48	
29CPL154	28	DIP	FPC	28	2.4	94/7E	Site 40/48	
29F010	32	DIP	FLASH	177,173	3.9	23A/269	Site 40/48	
29F010	32	PLCC	FLASH	173,177	3.9	23A/73A	ChipSite	
29F010	32	PLCC	FLASH	173,177	3.9	23A/73A	PinSite	32 PIN PLCC MB
29LPL141	28	DIP	FPC	28	2.2	97/79	Site 40/48	
29PL141	28	DIP	FPC	28	1.5	97/79	Site 40/48	
29PL142	28	DIP	FPC	28	2.2	97/76	Site 40/48	
30K12	28	DIP	PLS		2.6	97/A8	Site 40/48	
30S16	28	DIP	PLC		2.6	97/A9	Site 40/48	
30S16	28	PLCC	PLC		3.2	097/7A9	ChipSite	
30S16	28	PLCC	PLC		3.2	097/7A9	PinSite	28 PIN PLCC MB
32R16	40	DIP	PAL		3.6	22/47	Site 40/48	
32R16	44	PLCC	PAL		3.6	022/747	ChipSite	
32R16	44	PLCC	PAL		3.6	022/747	PinSite	44 PIN PLCC MB
32VX10/A	24	DIP	PAL		3.6	22/77	Site 40/48	
32VX10/A	24	SO	PAL		3.6	022/877	ChipSite	
32VX10/A	24	SO	PAL		3.6	022/877	PinSite	SOIC_30
53/6300	16	DIP	PROM		1.0	E5/01	Site 40/48	
53/6301	16	DIP	PROM		1.0	E5/01	Site 40/48	
53/6305	16	DIP	PROM		1.0	E5/03	Site 40/48	
53/6306	16	DIP	PROM		1.0	E5/03	Site 40/48	
53/6308	20	DIP	PROM		2.8	D1/08	Site 40/48	
53/6309	20	DIP	PROM		2.8	D1/08	Site 40/48	
53/6330	16	DIP	PROM		1.0	E7/02	Site 40/48	
53/6331	16	DIP	PROM		1.0	E7/02	Site 40/48	
53/6335	24	DIP	PROM		2.8	D1/14	Site 40/48	
53/6336	24	DIP	PROM		2.8	D1/14	Site 40/48	
53/6340	24	DIP	PROM		2.8	D1/15	Site 40/48	
53/6341	24	DIP	PROM		2.8	D1/15	Site 40/48	
53/6348	20	DIP	PROM		2.8	D1/09	Site 40/48	
53/6349	20	DIP	PROM		2.8	D1/09	Site 40/48	
53/6352	18	DIP	PROM		2.8	D1/05	Site 40/48	
53/6353	18	DIP	PROM		2.8	D1/05	Site 40/48	
53/6380	24	DIP	PROM		2.8	D1/16	Site 40/48	
53/6381	24	DIP	PROM		2.8	D1/16	Site 40/48	
53/6388	18	DIP	PROM		2.8	D1/06	Site 40/48	
53/6389	18	DIP	PROM		2.8	D1/06	Site 40/48	
53/63D1641	24	DIP	PROM		2.2	B2/80	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
53/63DA1643	24	DIP	PROM	1	2.2	AA/87	Site 40/48	
53/63DA441	24	DIP	PROM	1	2.2	AA/AC	Site 40/48	
53/63DA442	24	DIP	PROM	1	2.2	AA/AC	Site 40/48	
53/63DA841	24	DIP	PROM	1	2.2	AA/AD	Site 40/48	
53/63LS140	16	DIP	PROM		2.2	18/01	Site 40/48	
53/63LS141	16	DIP	PROM		2.2	18/01	Site 40/48	
53/63LS240	16	DIP	PROM		2.2	18/03	Site 40/48	
53/63LS241	16	DIP	PROM		2.2	18/03	Site 40/48	
53/63RA1681	24	DIP	PROM	1	2.2	18/A3	Site 40/48	
53/63RA481	24	DIP	PROM		2.2	EC/65	Site 40/48	
53/63RS1681	24	DIP	PROM	1	2.2	18/A3	Site 40/48	
53/63RS881	24	DIP	PROM		2.2	18/86	Site 40/48	
53/63S080	16	DIP	PROM		2.2	18/02	Site 40/48	
53/63S081	16	DIP	PROM		2.2	18/02	Site 40/48	
53/63S140	16	DIP	PROM		2.2	18/01	Site 40/48	
53/63S141	16	DIP	PROM		2.2	18/01	Site 40/48	
53/63S1641	20	DIP	PROM		2.2	18/53	Site 40/48	
53/63S1681	24	DIP	PROM		2.2	18/21	Site 40/48	
53/63S1681J	24	DIP	PROM		2.2	18/21	Site 40/48	
53/63S240	16	DIP	PROM		2.2	18/03	Site 40/48	
53/63S241	16	DIP	PROM		2.2	18/03	Site 40/48	
53/63S280	20	DIP	PROM		2.2	18/08	Site 40/48	
53/63S281	20	DIP	PROM		2.2	18/08	Site 40/48	
53/63S285	24	DIP	PROM		2.2	18/14	Site 40/48	
53/63S3281	24	DIP	PROM		2.2	18/63	Site 40/48	
53/63S440	18	DIP	PROM		2.2	18/05	Site 40/48	
53/63S441	18	DIP	PROM		2.2	18/05	Site 40/48	
53/63S480	20	DIP	PROM		2.2	18/09	Site 40/48	
53/63S481	20	DIP	PROM		2.2	18/09	Site 40/48	
53/63S485	24	DIP	PROM		2.2	18/15	Site 40/48	
53/63S485	28	LCC	PROM	44	3.0	18/7F	ChipSite	
53/63S485	28	LCC	PROM		3.0	18/7F	PinSite	28 PIN LCC MB
53/63S840	18	DIP	PROM		2.2	18/06	Site 40/48	
53/63S841	18	DIP	PROM		2.2	18/06	Site 40/48	
53/63S881	24	DIP	PROM		2.2	18/16	Site 40/48	
53RA1681	28	LCC	PROM	1	3.0	018/7A3	PinSite	28 PIN LCC MB
53RA1681	28	LCC	PROM	1,44	2.3	018/7A3	ChipSite	
5P16	24	DIP	PLE		2.1	17/CD	Site 40/48	
5P16	28	PLCC	PLE		2.1	017/7CD	ChipSite	
5P16	28	PLCC	PLE		3.0	017/7CD	PinSite	28 PIN PLCC MB
5P8/A	16	DIP	PLE		2.2	18/02	Site 40/48	
63D1641	28	PLCC	PROM		2.2	B2/9B	ChipSite	
63D1641	28	PLCC	PROM		3.0	B2/9B	PinSite	28 PIN PLCC MB
63DA841	28	PLCC	PROM	1	2.2	AA/A0	ChipSite	
63DA841	28	PLCC	PROM	1	3.0	AA/A0	PinSite	28 PIN PLCC MB
63RA1681	28	PLCC	PROM	1	2.2	18/9E	ChipSite	
63RA1681	28	PLCC	PROM	1	3.0	18/9E	PinSite	28 PIN PLCC MB
63RA481	28	PLCC	PROM		2.2	EC/8F	ChipSite	
63RA481	28	PLCC	PROM		3.0	EC/8F	PinSite	28 PIN PLCC MB
63RS1681	28	PLCC	PROM	1	2.2	18/9E	ChipSite	
63RS1681	28	PLCC	PROM	1	3.0	18/9E	PinSite	28 PIN PLCC MB
63RS881	28	PLCC	PROM	1	2.2	18/9C	ChipSite	
63RS881	28	PLCC	PROM	1	3.0	18/9C	PinSite	28 PIN PLCC MB
63S080	20	PLCC	PROM		2.2	18/6C	ChipSite	
63S080	20	PLCC	PROM		3.0	18/6C	PinSite	20 PIN PLCC MB
63S081	20	PLCC	PROM		2.2	18/6C	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
63S081	20	PLCC	PROM		3.0	18/6C	PinSite	20 PIN PLCC MB
63S140	20	PLCC	PROM		2.2	18/6B	ChipSite	
63S140	20	PLCC	PROM		3.0	18/6B	PinSite	20 PIN PLCC MB
63S141	20	PLCC	PROM		2.2	18/6B	ChipSite	
63S141	20	PLCC	PROM		3.0	18/6B	PinSite	20 PIN PLCC MB
63S1641	20	PLCC	PROM		2.2	018/753	ChipSite	
63S1641	20	PLCC	PROM		3.0	018/753	PinSite	20 PIN PLCC MB
63S1681	28	PLCC	PROM		2.2	18/8B	ChipSite	
63S1681	28	PLCC	PROM		3.0	18/8B	PinSite	28 PIN PLCC MB
63S240	20	PLCC	PROM		2.2	18/6D	ChipSite	
63S240	20	PLCC	PROM		3.0	18/6D	PinSite	20 PIN PLCC MB
63S241	20	PLCC	PROM		2.2	18/6D	ChipSite	
63S241	20	PLCC	PROM		3.0	18/6D	PinSite	20 PIN PLCC MB
63S280	20	PLCC	PROM		2.2	18/7B	ChipSite	
63S280	20	PLCC	PROM		3.0	18/7B	PinSite	20 PIN PLCC MB
63S281	20	PLCC	PROM		2.2	18/7B	ChipSite	
63S281	20	PLCC	PROM		3.0	18/7B	PinSite	20 PIN PLCC MB
63S3281	28	PLCC	PROM		2.2	18/8E	ChipSite	
63S3281	28	PLCC	PROM		3.0	18/8E	PinSite	28 PIN PLCC MB
63S440	20	PLCC	PROM		2.2	18/6E	ChipSite	
63S440	20	PLCC	PROM		3.0	18/6E	PinSite	20 PIN PLCC MB
63S441	20	PLCC	PROM		2.2	18/6E	ChipSite	
63S441	20	PLCC	PROM		3.0	18/6E	PinSite	20 PIN PLCC MB
63S480	20	PLCC	PROM		2.2	18/7C	ChipSite	
63S480	20	PLCC	PROM		3.0	18/7C	PinSite	20 PIN PLCC MB
63S481	20	PLCC	PROM		2.2	18/7C	ChipSite	
63S481	20	PLCC	PROM		3.0	18/7C	PinSite	20 PIN PLCC MB
63S841	20	PLCC	PROM		2.2	18/6F	ChipSite	
63S841	20	PLCC	PROM		3.0	18/6F	PinSite	20 PIN PLCC MB
63S881	28	PLCC	PROM		2.2	18/8A	ChipSite	
63S881	28	PLCC	PROM		3.0	18/8A	PinSite	28 PIN PLCC MB
6L16A	24	DIP	PAL		3.6	22/48	Site 40/48	
6L16A	24	SO	PAL		3.6	022/848	ChipSite	
6L16A	24	SO	PAL		3.6	022/848	PinSite	SOIC_30
6L16A-NL	28	PLCC	PAL		3.6	022/748	ChipSite	
6L16A-NL	28	PLCC	PAL		3.6	022/748	PinSite	28 PIN PLCC MB
6P16	24	DIP	PLE		2.1	17/CE	Site 40/48	
6P16	28	PLCC	PLE		2.1	017/7CE	ChipSite	
6P16	28	PLCC	PLE		3.0	017/7CE	PinSite	28 PIN PLCC MB
8751H	40	DIP	MICRO	2	1.5	54/58	Site 40/48	
8751H	44	LCC	MICRO	2	3.0	54/D4	PinSite	44 PIN LCC MB
8751H	44	LCC	MICRO	2,44	2.1	54/D4	ChipSite	
8753H	40	DIP	MICRO	2	1.5	54/6A	Site 40/48	
8753H	44	PLCC	MICRO	2	2.1	54/5B	ChipSite	
8753H	44	PLCC	MICRO	2	3.0	54/5B	PinSite	44 PIN PLCC MB
87C51	40	DIP	MICRO	2	3.8	15A/00B	Site 40/48	
87C51	44	LCC	MICRO	2	3.8	15A/1B2	PinSite	44 PIN LCC MB
87C51	44	LCC	MICRO	2,44	3.8	15A/1B2	ChipSite	
87C51	44	PLCC	MICRO	2	3.8	15A/1B2	ChipSite	
87C51	44	PLCC	MICRO	2	3.8	15A/1B2	PinSite	44 PIN PLCC MB
87C521	40	DIP	MICRO	2	3.8	15A/04F	Site 40/48	
87C521	44	LCC	MICRO	2	3.8	15A/143	PinSite	44 PIN LCC MB
87C521	44	LCC	MICRO	2,44	3.8	15A/143	ChipSite	
87C52T2	40	DIP	MICRO	2	3.4	15A/04F	Site 40/48	
87C52T2	44	LCC	MICRO	2	3.4	15A/143	PinSite	44 PIN LCC MB
87C52T2	44	LCC	MICRO	2,44	3.4	15A/143	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
87C541	40	DIP	MICRO	44	3.0	15A/073	Site 40/48	44 PIN LCC MB
87C541	44	LCC	MICRO		3.0	15A/144	ChipSite	
87C541	44	LCC	MICRO		3.0	15A/144	PinSite	
8L14A	24	DIP	PAL		3.6	22/49	Site 40/48	SOIC_30
8L14A	24	SO	PAL		3.6	022/849	ChipSite	
8L14A	24	SO	PAL		3.6	022/849	PinSite	
8L14A-NL	28	PLCC	PAL		3.6	022/749	ChipSite	28 PIN PLCC MB
8L14A-NL	28	PLCC	PAL		3.6	022/749	PinSite	
8P4	16	DIP	PLE		2.2	18/01	Site 40/48	
8P8	20	DIP	PLE		2.2	18/08	Site 40/48	
9708	24	DIP	EPROM		2.1	21/27	Site 40/48	
9708	24	DIP	EPROM		2.8	21/27	SetSite	
9732A	24	DIP	EPROM		2.0	27/24	SetSite	
9732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
9864	28	DIP	EEPROM		1.5	C9/A6	Site 40/48	
9864	28	DIP	EEPROM		2.0	C9/A6	SetSite	
9P4	16	DIP	PLE		2.2	18/03	Site 40/48	
9P8	20	DIP	PLE		2.2	18/09	Site 40/48	
9R8	24	DIP	PLE		2.2	EC/65	Site 40/48	
9R8	28	PLCC	PLE		2.2	0EC/765	ChipSite	
9R8	28	PLCC	PLE		3.0	0EC/765	PinSite	28 PIN PLCC MB
C16L8Q	20	DIP	PAL		2.4	DB/17	Site 40/48	
C16L8Q	20	PLCC	PAL		3.2	0DB/717	ChipSite	
C16L8Q	20	PLCC	PAL		3.2	0DB/717	PinSite	
C16L8Z	20	DIP	PAL		2.3	46/17	Site 40/48	
C16L8Z	20	PLCC	PAL		2.5	046/717	ChipSite	
C16L8Z	20	PLCC	PAL		3.0	046/717	PinSite	
C16R4Q	20	DIP	PAL		2.4	DB/24	Site 40/48	
C16R4Q	20	PLCC	PAL		2.7	0DB/724	ChipSite	
C16R4Q	20	PLCC	PAL		3.0	0DB/724	PinSite	
C16R4Z	20	DIP	PAL		2.3	46/24	Site 40/48	
C16R4Z	20	PLCC	PAL		2.5	046/724	ChipSite	
C16R4Z	20	PLCC	PAL		3.0	046/724	PinSite	
C16R6Q	20	DIP	PAL		2.4	DB/24	Site 40/48	
C16R6Q	20	PLCC	PAL		2.7	0DB/724	ChipSite	
C16R6Q	20	PLCC	PAL		3.0	0DB/724	PinSite	
C16R6Z	20	DIP	PAL		2.3	46/24	Site 40/48	
C16R6Z	20	PLCC	PAL		2.5	046/724	ChipSite	
C16R6Z	20	PLCC	PAL		3.0	046/724	PinSite	
C16R8Q	20	DIP	PAL		2.4	DB/24	Site 40/48	
C16R8Q	20	PLCC	PAL		2.7	0DB/724	ChipSite	
C16R8Q	20	PLCC	PAL		3.0	0DB/724	PinSite	
C16R8Z	20	DIP	PAL		2.3	46/24	Site 40/48	
C16R8Z	20	PLCC	PAL		2.5	046/724	ChipSite	
C16R8Z	20	PLCC	PAL		3.0	046/724	PinSite	
C18U8	20	DIP	PAL		2.4	DB/2E	Site 40/48	
C18U8	20	PLCC	PAL		2.4	0DB/72E	ChipSite	
C18U8	20	PLCC	PAL		3.0	0DB/72E	PinSite	
C20L8Z	24	DIP	PAL		1.7	46/26	Site 40/48	
C20L8Z	28	PLCC	PAL		2.5	046/726	ChipSite	
C20L8Z	28	PLCC	PAL		3.0	046/726	PinSite	
C20R4Z	24	DIP	PAL		1.7	46/27	Site 40/48	
C20R4Z	28	PLCC	PAL		2.4	046/727	ChipSite	
C20R4Z	28	PLCC	PAL		3.0	046/727	PinSite	
C20R6Z	24	DIP	PAL		1.7	46/27	Site 40/48	
C20R6Z	28	PLCC	PAL		2.4	046/727	ChipSite	
C20R6Z	28	PLCC	PAL		2.4	046/727	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
C20R6Z	28	PLCC	PAL		3.0	046/727	PinSite	28 PIN PLCC MB
C20R8Z	24	DIP	PAL		1.7	46/27	Site 40/48	
C20R8Z	28	PLCC	PAL		2.4	046/727	ChipSite	
C20R8Z	28	PLCC	PAL		3.0	046/727	PinSite	28 PIN PLCC MB
C22V10	24	DIP	PAL		2.3	DB/28	Site 40/48	
C22V10	28	PLCC	PAL		3.2	0DB/728	ChipSite	
C22V10	28	PLCC	PAL		3.2	0DB/728	PinSite	28 PIN PLCC MB
CE16V8-7/5	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8-7/5	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8-7/5	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8H-15	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8H-15	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8H-15	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8H-15/4	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8H-15/4	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8H-15/4	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8H-25	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8H-25	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8H-25	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8H-25/4	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8H-25/4	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8H-25/4	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8H-25/4	20	SO	PAL	49	3.9	080/855	ChipSite	
CE16V8H-25/4	20	SO	PAL	49	3.9	080/855	PinSite	SOIC_30
CE16V8HD	24	DIP	PAL		3.9	080/0E2	Site 40/48	
CE16V8Q-10/4	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8Q-10/4	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8Q-10/4	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8Q-15	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8Q-15	20	PLCC	PAL	49	3.9	080/055	ChipSite	
CE16V8Q-15	20	PLCC	PAL	49	3.9	080/055	PinSite	20 PIN PLCC MB
CE16V8Q-15/4	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8Q-15/4	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8Q-15/4	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8Q-25	20	DIP	PAL	49	3.9	080/055	Site 40/48	
CE16V8Q-25	20	PLCC	PAL	49	3.9	080/055	ChipSite	
CE16V8Q-25	20	PLCC	PAL	49	3.9	080/055	PinSite	20 PIN PLCC MB
CE16V8Q-25/4	20	DIP	PAL	49	3.9	80/55	Site 40/48	
CE16V8Q-25/4	20	PLCC	PAL	49	3.9	080/755	ChipSite	
CE16V8Q-25/4	20	PLCC	PAL	49	3.9	080/755	PinSite	20 PIN PLCC MB
CE16V8Z	20	DIP	PAL		3.9	080/0E1	Site 40/48	
CE16V8Z	20	PLCC	PAL		3.9	080/1E1	ChipSite	
CE16V8Z	20	PLCC	PAL		3.9	080/1E1	PinSite	20 PIN PLCC MB
CE20RA10H-15/4	24	DIP	PAL	49	3.9	080/045	Site 40/48	
CE20RA10H-15/4	28	PLCC	PAL	49	3.9	080/745	ChipSite	
CE20RA10H-15/4	28	PLCC	PAL	49	3.9	080/745	PinSite	28 PIN PLCC MB
CE20RA10H-25/4	24	DIP	PAL	49	3.9	080/045	Site 40/48	
CE20RA10H-25/4	28	PLCC	PAL	49	3.9	080/045	ChipSite	
CE20RA10H-25/4	28	PLCC	PAL	49	3.9	080/045	PinSite	28 PIN PLCC MB
CE20RA10Q-15/4	24	DIP	PAL	49	3.9	080/045	Site 40/48	
CE20RA10Q-15/4	28	PLCC	PAL	49	3.9	080/045	ChipSite	
CE20RA10Q-15/4	28	PLCC	PAL	49	3.9	080/045	PinSite	28 PIN PLCC MB
CE20RA10Q-25/4	24	DIP	PAL	49	3.9	080/045	Site 40/48	
CE20RA10Q-25/4	28	PLCC	PAL	49	3.9	080/045	ChipSite	
CE20RA10Q-25/4	28	PLCC	PAL	49	3.9	080/045	PinSite	28 PIN PLCC MB
CE20RA10Z	24	DIP	PAL		3.9	0DE/045	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
CE20RA10Z	28	PLCC	PAL		3.9	0DE/745	ChipSite	28 PIN PLCC MB
CE20RA10Z	28	PLCC	PAL		3.9	0DE/745	PinSite	
CE20V8H-10/4	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	28 PIN PLCC MB
CE20V8H-10/4	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	
CE20V8H-10/4	28	PLCC	EEPLD	49	3.9	080/657	PinSite	
CE20V8H-15	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	
CE20V8H-15	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	28 PIN PLCC MB
CE20V8H-15	28	PLCC	EEPLD	49	3.9	080/657	PinSite	
CE20V8H-15/4	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	28 PIN PLCC MB
CE20V8H-15/4	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	
CE20V8H-15/4	28	PLCC	EEPLD	49	3.9	080/657	PinSite	
CE20V8H-25	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	
CE20V8H-25	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	28 PIN PLCC MB
CE20V8H-25	28	PLCC	EEPLD	49	3.9	080/657	PinSite	
CE20V8H-25/4	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	28 PIN PLCC MB
CE20V8H-25/4	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	
CE20V8H-25/4	28	PLCC	EEPLD	49	3.9	080/657	PinSite	28 PIN PLCC MB
CE20V8Q-15	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	
CE20V8Q-15	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	28 PIN PLCC MB
CE20V8Q-15	28	PLCC	EEPLD	49	3.9	080/657	PinSite	
CE20V8Q-15/4	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	28 PIN PLCC MB
CE20V8Q-15/4	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	
CE20V8Q-15/4	28	PLCC	EEPLD	49	3.9	080/657	PinSite	28 PIN PLCC MB
CE20V8Q-25	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	
CE20V8Q-25	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	28 PIN PLCC MB
CE20V8Q-25	28	PLCC	EEPLD	49	3.9	080/657	PinSite	
CE20V8Q-25/4	24	DIP	EEPLD	49	3.9	080/057	Site 40/48	28 PIN PLCC MB
CE20V8Q-25/4	28	PLCC	EEPLD	49	3.9	080/657	ChipSite	
CE20V8Q-25/4	28	PLCC	EEPLD	49	3.9	080/657	PinSite	28 PIN PLCC MB
CE22V10H-10/5	24	DIP	PAL	49,28	3.9	080/028	Site 40/48	
CE22V10H-10/5	28	PLCC	PAL	49	3.9	080/728	ChipSite	28 PIN PLCC MB
CE22V10H-10/5	28	PLCC	PAL	49	3.9	080/728	PinSite	
CE22V10H-15	24	DIP	PAL	49	3.9	080/028	Site 40/48	28 PIN PLCC MB
CE22V10H-15	28	PLCC	PAL	49	3.9	080/728	ChipSite	
CE22V10H-15	28	PLCC	PAL	49	3.9	080/728	PinSite	
CE22V10H-15/4	24	DIP	PAL	49,28	3.9	080/028	Site 40/48	
CE22V10H-15/4	28	PLCC	PAL	49,28	3.9	080/728	ChipSite	28 PIN PLCC MB
CE22V10H-15/4	28	PLCC	PAL	49,28	3.9	080/728	PinSite	
CE22V10H-25	24	DIP	PAL	49	3.9	080/028	Site 40/48	28 PIN PLCC MB
CE22V10H-25	24	SO	PAL	49	3.9	080/828	ChipSite	
CE22V10H-25	24	SO	PAL	49	3.9	080/828	PinSite	SOIC_30
CE22V10H-25	28	PLCC	PAL	49	3.9	080/728	ChipSite	28 PIN PLCC MB
CE22V10H-25	28	PLCC	PAL	49	3.9	080/728	PinSite	
CE22V10H-25/4	24	DIP	PAL	49,28	3.9	080/028	Site 40/48	28 PIN PLCC MB
CE22V10H-25/4	28	PLCC	PAL	49,28	3.9	080/728	ChipSite	
CE22V10H-25/4	28	PLCC	PAL	49,28	3.9	080/728	PinSite	28 PIN PLCC MB
CE22V10Q-25	24	DIP	PAL	49	3.9	080/028	Site 40/48	
CE22V10Q-25	28	PLCC	PAL	49	3.9	080/728	ChipSite	28 PIN PLCC MB
CE22V10Q-25	28	PLCC	PAL	49	3.9	080/728	PinSite	
CE22V10Q-25/4	24	DIP	PAL	49,28	3.9	080/028	Site 40/48	28 PIN PLCC MB
CE22V10Q-25/4	28	PLCC	PAL	49,28	3.9	080/728	ChipSite	
CE22V10Q-25/4	28	PLCC	PAL	49,28	3.9	080/728	PinSite	28 PIN PLCC MB
CE22V10Z	24	DIP	PAL		3.6	80/E0	Site 40/48	
CE24V10	28	DIP	PAL		3.9	080/0A1	Site 48	28 PIN PLCC MB
CE24V10H-15	28	PLCC	PAL		3.9	080/7A1	PinSite	
CE26V12H	28	DIP	EEPLD	53	3.9	080/04E	Site 48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI (continued)</b>								
CE26V12H	28	PLCC	EEPLD	53	3.9	080/74E	PinSite	28 PIN PLCC MB
CE26V12H/4	28	DIP	EEPLD		3.9	080/0AE	Site 48	
CE26V12H/4	28	PLCC	EEPLD		3.9	080/7AE	PinSite	28 PIN PLCC MB
CE29M16-25/-35	24	DIP	PAL		3.9	060/04B	Site 40/48	
CE29M16/4	24	DIP	PAL		3.9	080/04B	Site 40/48	
CE29M16/4	28	PLCC	PAL		3.9	080/74B	ChipSite	
CE29M16/4	28	PLCC	PAL		3.9	080/74B	PinSite	28 PIN PLCC MB
CE29MA16-25/-35	24	DIP	PAL		3.9	060/04C	Site 40/48	
CE29MA16/4	24	DIP	PAL		3.9	080/04C	Site 40/48	
CE29MA16/4	28	PLCC	PAL		3.9	080/74C	ChipSite	
CE29MA16/4	28	PLCC	PAL		3.9	080/74C	PinSite	28 PIN PLCC MB
CE610	24	DIP	PAL		3.9	080/059	Site 40/48	
CE610	28	PLCC	PAL		3.9	080/759	PinSite	PPI_5201
CE610H	24	DIP	PAL		3.9	080/059	Site 40/48	
PLS105	28	DIP	PLS		2.2	2A/63	Site 40/48	
PLS105	28	PLCC	PLS		2.2	02A/763	ChipSite	
PLS105	28	PLCC	PLS		3.0	02A/763	PinSite	28 PIN PLCC MB
PLS167	24	DIP	PLS		2.2	2A/60	Site 40/48	
PLS168	24	DIP	PLS		2.2	2A/74	Site 40/48	
<b>Altera Corporation</b>								
1200	40	DIP	EPLD		1.0	26/97	Site 40/48	
1210	40	DIP	EPLD		1.0	44/97	Site 40/48	
1210	44	JLCC	EPLD		3.3	044/797	ChipSite	
1210	44	JLCC	EPLD		3.3	044/797	PinSite	44 PIN PLCC MB
1210	44	PLCC	EPLD		1.0	044/797	ChipSite	
1210	44	PLCC	EPLD		3.0	044/797	PinSite	44 PIN PLCC MB
1400	40	DIP	EPB		3.6	26/5D	Site 40/48	
1400	44	JLCC	EPB		3.6	026/75D	PinSite	44 PIN PLCC MB
1800	68	JLCC	EPLD		3.3	26/9A	ChipSite	
1800	68	JLCC	EPLD		3.3	26/9A	PinSite	68 PIN PLCC MB
1800	68	PGA	EPLD		3.2	026/99A	PinSite	
1800	68	PLCC	EPLD		2.7	26/9A	ChipSite	
1800	68	PLCC	EPLD		3.0	26/9A	PinSite	68 PIN PLCC MB
1810	68	PGA	EPLD		3.9	226/99A	PinSite	
1810-20/25	68	PLCC	EPLD		3.3	6B/9A	ChipSite	
1810-20/25	68	PLCC	EPLD		3.3	6B/9A	PinSite	68 PIN PLCC MB
1810-20T/25T/35T	68	PLCC	EPLD	141	3.3	226/0DF	ChipSite	
1810-20T/25T/35T	68	PLCC	EPLD	141	3.3	226/0DF	PinSite	68 PIN PLCC MB
1810-20T/25T/35T-NEW	68	PLCC	EPLD	141	3.7	210/222	ChipSite	
1810-20T/25T/35T-NEW	68	PLCC	EPLD	141	3.7	210/222	PinSite	68 PIN PLCC MB
1810-35/40/45	68	JLCC	EPLD		3.3	226/09A	ChipSite	
1810-35/40/45	68	JLCC	EPLD		3.3	226/09A	PinSite	68 PIN PLCC MB
1810-35/40/45	68	PLCC	EPLD		3.3	226/09A	ChipSite	
1810-35/40/45	68	PLCC	EPLD		3.3	226/09A	PinSite	68 PIN PLCC MB
1830	68	PLCC	EPLD		3.6	6B/9A	ChipSite	
1830	68	PLCC	EPLD		3.6	6B/9A	PinSite	68 PIN PLCC MB
300	20	DIP	EPLD	34	1.7	26/50	Site 40/48	
310	20	DIP	EPLD	129	3.8	44/50	Site 48	
320	20	DIP	EPLD		1.1	44/95	Site 40/48	
330	20	DIP	EPLD		3.6	6B/95	Site 40/48	
330	20	PLCC	EPLD		3.6	06B/795	ChipSite	
330	20	PLCC	EPLD		3.6	06B/795	PinSite	20 PIN PLCC MB
330	20	SO	EPLD		3.7	06B/895	ChipSite	
330	20	SO	EPLD		3.7	06B/895	PinSite	SOIC_30
448	28	DIP	EPLD	34,49,86	2.6	26/2F	Site 48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Altera Corporation (continued)</b>								
448	28	JLCC	EPLD	49,86	2.6	026/72F	ChipSite	
448	28	JLCC	EPLD	49,86	3.0	026/72F	PinSite	28 PIN PLCC MB
5016	20	DIP	EPLD	55	3.8	17B/0B9	Site 48	
5032	28	DIP	MAX	55	3.9	17B/0AE	Site 48	
5032	28	JLCC	MAX	55	3.9	17B/7AE	PinSite	28 PIN PLCC MB
5032	28	PLCC	MAX	55	3.9	27B/7AE	PinSite	28 PIN PLCC MB
5064	44	JLCC	MAX	54	3.7	17B/0B8	PinSite	44 PIN PLCC MB
512	24	DIP	EPLD	49	2.8	55/3F	Site 40/48	
5128	68	JLCC	MAX	54	3.8	17B/0B7	PinSite	68 PIN PLCC MB
5128	68	PGA	MAX	54	3.8	17B/1B0	PinSite	
5128	68	PLCC	MAX	54	3.8	17B/0B7	PinSite	68 PIN PLCC MB
5130	84	JLCC	MAX	54	3.8	17B/77C	PinSite	84 PIN PLCC MB
5130	100	PGA	MAX	54	3.9	17B/97C	PinSite	PPI-0401
5130	100	QFP	MAX	54	3.9	17B/77C	PinSite	PPI-0519
5192	84	JLCC	EPLD	54	3.9	17B/0B7	PinSite	84 PIN PLCC MB
600	24	DIP	EPLD	37	2.7	26/59	Site 40/48	
600	28	JLCC	EPLD	37	3.3	026/759	ChipSite	
600	28	JLCC	EPLD	37	3.3	026/759	PinSite	28 PIN PLCC MB
600	28	PLCC	EPLD	37	2.7	026/759	ChipSite	
600	28	PLCC	EPLD	37	3.0	026/759	PinSite	28 PIN PLCC MB
610	24	SO	EPLD		3.9	226/260	ChipSite	
610	24	SO	EPLD		3.9	226/260	PinSite	SOIC_30
610-15/20	24	DIP	EPLD	37	3.6	6B/59	Site 40/48	
610-15/20	28	JLCC	EPLD		3.6	06B/759	ChipSite	
610-15/20	28	JLCC	EPLD		3.6	06B/759	PinSite	28 PIN PLCC MB
610-15/20	28	PLCC	EPLD		3.6	06B/759	ChipSite	
610-15/20	28	PLCC	EPLD		3.6	06B/759	PinSite	28 PIN PLCC MB
610-25/30/35/40	24	DIP	EPLD	34,37	3.3	226/059	Site 40/48	
610-25/30/35/40	28	JLCC	EPLD	34,37	3.3	226/759	ChipSite	
610-25/30/35/40	28	JLCC	EPLD	34,37	3.3	226/759	PinSite	28 PIN PLCC MB
610-25/30/35/40	28	PLCC	EPLD	34,37	3.3	226/759	ChipSite	
610-25/30/35/40	28	PLCC	EPLD	34,37	3.3	226/759	PinSite	28 PIN PLCC MB
610T	24	DIP	EPLD	37	3.3	226/0DD	Site 40/48	
630	24	DIP	EPLD		3.3	6B/59	Site 40/48	
630	24	SO	EPLD		3.7	06B/859	ChipSite	
630	24	SO	EPLD		3.7	06B/859	PinSite	SOIC_30
630	28	PLCC	EPLD		3.3	06B/759	ChipSite	
630	28	PLCC	EPLD		3.3	06B/759	PinSite	28 PIN PLCC MB
900	40	DIP	EPLD		3.6	26/96	Site 40/48	
900	44	JLCC	EPLD		3.6	026/796	ChipSite	
900	44	JLCC	EPLD		3.6	026/796	PinSite	44 PIN PLCC MB
900	44	PLCC	EPLD		3.6	026/796	ChipSite	
900	44	PLCC	EPLD		3.6	026/796	PinSite	44 PIN PLCC MB
910	40	DIP	EPLD		3.3	226/096	Site 40/48	
910	44	JLCC	EPLD		3.3	226/796	ChipSite	
910	44	JLCC	EPLD		3.3	226/796	PinSite	44 PIN PLCC MB
910	44	PLCC	EPLD		3.3	226/796	ChipSite	
910	44	PLCC	EPLD		3.3	226/796	PinSite	44 PIN PLCC MB
910A	40	DIP	EPLD		3.3	326/0DE	Site 40/48	
910A	44	JLCC	EPLD		3.5	326/7DE	ChipSite	
910A	44	JLCC	EPLD		3.5	326/7DE	PinSite	44 PIN PLCC MB
910A	44	PLCC	EPLD		3.3	326/7DE	ChipSite	
910A	44	PLCC	EPLD		3.3	326/7DE	PinSite	44 PIN PLCC MB
910T	40	DIP	EPLD		3.3	226/0DE	Site 40/48	
910T	44	PLCC	EPLD		3.3	226/7DE	ChipSite	
910T	44	PLCC	EPLD		3.3	226/7DE	PinSite	44 PIN PLCC MB

**Asahi Kasei**

27CX161	24	DIP	EPROM		3.1	170/068	Site 40/48
27CX162	24	DIP	EPROM		3.1	170/068	Site 40/48
27CX321	24	DIP	EPROM	31	3.6	382/063	Site 40/48
27CX322	24	DIP	EPROM	31	3.6	382/063	Site 40/48
27CX641	24	DIP	EPROM	31	3.6	82/67	Site 40/48
27CX642	24	DIP	EPROM	31	3.6	82/67	Site 40/48
28C64	28	DIP	EEPROM		3.1	CA/98	Site 40/48
93C47	8	DIP	EEPROM		3.5	1BE/10E	Site 40/48
93C57	8	DIP	EEPROM		3.5	1BF/179	Site 40/48
93C67	8	DIP	EEPROM		3.5	1C0/17A	Site 40/48

**Atmel Corporation**

22LV10	24	DIP	EPLD		3.9	165/028	Site 40/48
22LV10L	24	DIP	EPLD		3.9	165/028	Site 40/48
22V10	24	DIP	EPLD		3.9	65/28	Site 40/48
22V10	28	LCC	EPLD		3.9	065/728	ChipSite
22V10	28	LCC	EPLD		3.9	065/728	PinSite 28 PIN LCC MB
22V10	28	PLCC	EPLD		3.9	065/728	ChipSite
22V10	28	PLCC	EPLD		3.9	065/728	PinSite 28 PIN PLCC MB
2500	40	DIP	EPLD		2.6	131/125	Site 40/48
2500	44	LCC	EPLD		3.6	131/145	ChipSite
2500	44	LCC	EPLD		3.6	131/145	PinSite 44 PIN LCC MB
2500	44	PLCC	EPLD		2.8	131/145	ChipSite
2500	44	PLCC	EPLD		3.0	131/145	PinSite 44 PIN PLCC MB
2552	68	PLCC	FPLA	42	3.6	159/08C	Site 40/48
27256	28	DIP	EPROM		2.1	93/32	SetSite
27256	28	DIP	EPROM		2.1	93/32	Site 40/48
27C010	32	DIP	EPROM		2.7	115/0CB	Site 40/48
27C010	32	DIP	EPROM		2.8	115/0CB	SetSite
27C010	32	JLCC	EPROM		3.2	115/0DE	ChipSite
27C010	32	JLCC	EPROM		3.2	115/0DE	PinSite 32 PIN PLCC MB
27C010	32	LCC	EPROM	44	2.8	115/0DE	ChipSite
27C010	32	LCC	EPROM		3.0	115/0DE	PinSite 32 PIN LCC MB
27C010	32	PLCC	EPROM		2.8	115/0DE	ChipSite
27C010	32	PLCC	EPROM		3.0	115/0DE	PinSite 32 PIN PLCC MB
27C040	32	DIP	EPROM		3.8	93/F6	SetSite
27C040	32	DIP	EPROM		3.8	93/F6	Site 40/48
27C1024	40	DIP	EPROM		3.9	141/0A8	SetSite
27C1024	40	DIP	EPROM		3.9	141/0A8	Site 40/48
27C1024	44	LCC	EPROM	44	3.9	141/088	ChipSite
27C1024	44	LCC	EPROM		3.9	141/088	PinSite 44 PIN LCC MB
27C128	28	DIP	EPROM		2.5	93/51	SetSite
27C128	28	DIP	EPROM		2.5	93/51	Site 40/48
27C256	28	DIP	EPROM		2.1	93/32	SetSite
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48
27C256	32	LCC	EPROM	44	2.3	93/C3	ChipSite
27C256	32	LCC	EPROM		3.0	93/C3	PinSite 32 PIN LCC MB
27C256	32	PLCC	EPROM		2.1	93/C3	ChipSite
27C256	32	PLCC	EPROM		3.0	93/C3	PinSite 32 PIN PLCC MB
27C256R	28	DIP	EPROM		3.0	115/032	SetSite
27C256R	28	DIP	EPROM		3.0	115/032	Site 40/48
27C256R	32	LCC	EPROM	44	3.1	115/0C3	ChipSite
27C256R	32	LCC	EPROM		3.1	115/0C3	PinSite 32 PIN LCC MB
27C256R	32	PLCC	EPROM		3.1	115/0C3	ChipSite
27C256R	32	PLCC	EPROM		3.1	115/0C3	PinSite 32 PIN PLCC MB
27C512	28	DIP	EPROM		2.0	4B/A4	SetSite
27C512	28	DIP	EPROM		2.0	4B/A4	Site 40/48

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Atmel Corporation (continued)</b>								
27C512	32	LCC	EPROM	44	2.4	4B/C4	ChipSite	32 PIN LCC MB
27C512	32	LCC	EPROM		3.0	4B/C4	PinSite	
27C512	32	PLCC	EPROM		2.1	4B/C4	ChipSite	32 PIN PLCC MB
27C512	32	PLCC	EPROM		3.0	4B/C4	PinSite	
27C512R	28	DIP	EPROM		2.7	116/0A4	SetSite	Site 40/48
27C512R	28	DIP	EPROM		2.7	116/0A4	Site 40/48	
27C512R	32	JLCC	EPROM		3.2	116/0C4	ChipSite	32 PIN PLCC MB
27C512R	32	JLCC	EPROM		3.2	116/0C4	PinSite	
27C512R	32	LCC	EPROM	44	3.2	116/0C4	ChipSite	32 PIN LCC MB
27C512R	32	LCC	EPROM		3.2	116/0C4	PinSite	
27C512R	32	PLCC	EPROM		3.2	116/0C4	ChipSite	32 PIN PLCC MB
27C512R	32	PLCC	EPROM		3.2	116/0C4	PinSite	
27C513	28	DIP	EPROM		2.0	5B/5E	SetSite	Site 40/48
27C513	28	DIP	EPROM		2.0	5B/5E	Site 40/48	
27C513R	28	DIP	EPROM		3.1	16D/05E	SetSite	Site 40/48
27C513R	28	DIP	EPROM		3.1	16D/05E	Site 40/48	
27HC1024	40	DIP	EPROM		3.9	141/0A8	Site 40/48	SetSite
27HC256	28	DIP	EPROM		2.2	93/32	SetSite	
27HC256	28	DIP	EPROM		2.2	93/32	Site 40/48	32 PIN LCC MB
27HC256	32	LCC	EPROM	44	2.3	93/C3	ChipSite	
27HC256	32	LCC	EPROM		3.0	93/C3	PinSite	32 PIN PLCC MB
27HC256	32	PLCC	EPROM		2.2	93/C3	ChipSite	
27HC256	32	PLCC	EPROM		3.0	93/C3	PinSite	SetSite
27HC64	28	DIP	EPROM		2.1	93/33	SetSite	
27HC64	28	DIP	EPROM		2.1	93/33	Site 40/48	44
27HC64	32	LCC	EPROM		2.4	093/733	ChipSite	
27HC64	32	LCC	EPROM		3.0	093/733	PinSite	32 PIN LCC MB
27HC64	32	PLCC	EPROM		2.3	093/733	ChipSite	32 PIN PLCC MB
27HC64	32	PLCC	EPROM		3.0	093/733	PinSite	
27HC641	24	DIP	EPROM		2.0	90/67	SetSite	Site 40/48
27HC641	24	DIP	EPROM		2.0	90/67	Site 40/48	
27HC641	28	LCC	EPROM	44	2.3	090/767	ChipSite	28 PIN LCC MB
27HC641	28	LCC	EPROM		3.0	090/767	PinSite	
27HC641	28	PLCC	EPROM		2.3	090/767	ChipSite	28 PIN PLCC MB
27HC641	28	PLCC	EPROM		3.0	090/767	PinSite	
27HC641R	24	DIP	EPROM		3.4	115/067	Site 40/48	Site 40/48
27HC642	24	DIP	EPROM		2.0	90/67	Site 40/48	
27HC642	24	DIP	EPROM		2.8	90/67	SetSite	Site 40/48
27HC642R	24	DIP	EPROM		3.5	115/067	Site 40/48	
27LV010	32	DIP	EPROM		3.9	115/0CB	SetSite	Site 40/48
27LV010	32	DIP	EPROM		3.9	115/0CB	Site 40/48	
27LV040	32	DIP	EPROM		3.9	93/F6	SetSite	Site 40/48
27LV040	32	DIP	EPROM		3.9	93/F6	Site 40/48	
27LV256R	28	DIP	EPROM		3.9	115/032	SetSite	Site 40/48
27LV256R	28	DIP	EPROM		3.9	115/032	Site 40/48	
27LV512R	28	DIP	EPROM		3.9	116/0A4	SetSite	Site 40/48
27LV512R	28	DIP	EPROM		3.9	116/0A4	Site 40/48	
28C010	32	DIP	EEPROM	36	3.5	0BA/110	Site 40/48	44 PIN LCC MB
28C010	44	LCC	EEPROM	36	3.8	0BA/810	ChipSite	
28C010	44	LCC	EEPROM	36	3.8	0BA/810	PinSite	Site 40/48
28C04	24	DIP	EEPROM		2.5	C4/82	Site 40/48	
28C1024	40	DIP	EEPROM		3.5	1B7/1CE	Site 40/48	Site 40/48
28C16	24	DIP	EEPROM		2.1	C4/96	Site 40/48	
28C16	24	DIP	EEPROM		2.8	C4/96	SetSite	32 PIN PLCC MB
28C16	32	PLCC	EEPROM		2.1	0C4/796	ChipSite	
28C16	32	PLCC	EEPROM		3.0	0C4/796	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Atmel Corporation (continued)</b>								
28C17	28	DIP	EEPROM		2.6	C4/A2	Site 40/48	
28C256	28	DIP	EEPROM	36	2.4	BA/99	Site 40/48	
28C256	28	DIP	EEPROM	36	3.0	BA/99	SetSite	
28C256	28	PGA	EEPROM	36	3.6	0BA/1C9	PinSite	
28C256	32	PLCC	EEPROM	36	2.5	BA/ED	ChipSite	
28C256	32	PLCC	EEPROM	36	3.0	BA/ED	PinSite	32 PIN PLCC MB
28C64	28	DIP	EEPROM		2.0	C4/98	SetSite	
28C64	28	DIP	EEPROM		2.1	C4/98	Site 40/48	
28C64	32	PLCC	EEPROM		2.1	C4/5D	ChipSite	
28C64	32	PLCC	EEPROM		3.0	C4/5D	PinSite	32 PIN PLCC MB
28HC16	24	DIP	EEPROM		2.3	C4/96	Site 40/48	
28HC16	24	DIP	EEPROM		2.8	C4/96	SetSite	
28HC191	24	DIP	PROM		2.5	D2/1C	Site 40/48	
28HC191	24	DIP	PROM		2.8	D2/1C	SetSite	
28HC256	28	DIP	EEPROM	36	2.5	BA/99	Site 40/48	
28HC291	24	DIP	PROM		2.5	D2/1C	Site 40/48	
28HC64	28	DIP	EEPROM		2.5	CA/98	Site 40/48	
28HC64	32	PLCC	EEPROM		2.5	C4/5D	ChipSite	
28HC64	32	PLCC	EEPROM		3.0	C4/5D	PinSite	32 PIN PLCC MB
28MC010	32	DIP	EEPROM	147,36	3.3	198/110	SetSite	
28MC010	32	DIP	EEPROM	147,36	3.3	198/110	Site 40/48	
28PC64	28	DIP	EPROM		2.5	C4/98	Site 40/48	
28PC64	28	DIP	EPROM		3.3	C4/98	SetSite	
28PC64	32	PLCC	EPROM		2.5	C4/5D	ChipSite	
28PC64	32	PLCC	EPROM		3.0	C4/5D	PinSite	32 PIN PLCC MB
29C010	32	DIP	PEROM		3.6	3ED/310	Site 40/48	
29C010	32	PLCC	PEROM		3.9	3ED/261	ChipSite	
29C010	32	PLCC	PEROM		3.9	3ED/261	PinSite	32 PIN PLCC MB
29C256	28	DIP	PEROM	36	3.0	0BA/13A	Site 40/48	
29C256	32	PLCC	PEROM	36	3.6	0BA/73A	ChipSite	
29C256	32	PLCC	PEROM	36	3.6	0BA/73A	PinSite	32 PIN PLCC MB
32C16	40	DIP	PROM		3.9	141/1B4	SetSite	
32C16	40	DIP	PROM		3.9	141/1B4	Site 40/48	
5000	68	PGA	EPLD	148	3.8	131/FF5	PinSite	
5000	68	PLCC	EPLD		3.6	131/0F5	PinSite	68 PIN PLCC MB
5001	68	JLCC	EPLD		3.9	131/EF5	PinSite	68 PIN PLCC MB
750	24	DIP	EPLD		2.2	65/0F	Site 40/48	
750	28	LCC	EPLD		3.8	065/70F	ChipSite	
750	28	LCC	EPLD		3.8	065/70F	PinSite	28 PIN LCC MB
750	28	PLCC	EPLD		2.8	065/70F	ChipSite	
750	28	PLCC	EPLD		3.0	065/70F	PinSite	28 PIN PLCC MB
ATH3000	68	JLCC	EPLD		3.9	225/253	PinSite	68 PIN PLCC MB
ATH3000	68	PLCC	N/A		3.9	225/253	PinSite	68 PIN PLCC MB
ATV18V8Z	20	DIP	EPLD		3.6	86/4F	Site 40/48	
ATV18V8Z	20	PLCC	EPLD		3.6	086/74F	ChipSite	
ATV18V8Z	20	PLCC	EPLD		3.6	086/74F	PinSite	20 PIN PLCC MB
ATV2552	68	JLCC	FPLA		3.6	159/08D	PinSite	68 PIN PLCC MB
ATV2552	68	PLCC	FPLA		3.6	159/08D	PinSite	68 PIN PLCC MB
ATV415	28	DIP	FPLA		3.6	86/AA	Site 40/48	
ATV415	28	PLCC	FPLA		3.6	086/7AA	ChipSite	
ATV415	28	PLCC	FPLA		3.6	086/7AA	PinSite	28 PIN PLCC MB
ATV42VA12	24	DIP	FPLA	33	3.6	86/8A	Site 40/48	
ATV42VA12	28	PLCC	FPLA	33	3.6	086/78A	ChipSite	
ATV42VA12	28	PLCC	FPLA	33	3.6	086/78A	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Catalyst Semiconductor</b>								
22C10	18	DIP	SRAM		3.5	184/191	Site 48	
22C12	18	DIP	SRAM		3.5	184/194	Site 48	
24C02	8	DIP	EEPROM		3.8	F20/119	Site 40/48	
24C04	8	DIP	EEPROM		3.8	120/11A	Site 40/48	
24C16	8	DIP	EEPROM		3.8	120/11B	Site 40/48	
27010	32	DIP	EPROM		2.5	5C/CB	Site 40/48	
27010	32	DIP	EPROM		2.8	5C/CB	SetSite	
27128A	28	DIP	EPROM		2.2	5C/51	SetSite	
27128A	28	DIP	EPROM		2.2	5C/51	Site 40/48	
27256	28	DIP	EPROM		2.2	5C/32	SetSite	
27256	28	DIP	EPROM		2.2	5C/32	Site 40/48	
27512	28	DIP	EPROM		2.2	5E/A4	SetSite	
27512	28	DIP	EPROM		2.2	5E/A4	Site 40/48	
2764A	28	DIP	EPROM		2.2	5C/33	SetSite	
2764A	28	DIP	EPROM		2.2	5C/33	Site 40/48	
27C210	40	DIP	EPROM		2.5	5F/A8	Site 40/48	
27C210	40	DIP	EPROM		2.8	5F/A8	SetSite	
27C210	44	PLCC	EPROM		3.8	05F/7A8	ChipSite	
27C210	44	PLCC	EPROM		3.8	05F/7A8	PinSite	44 PIN PLCC MB
27HC010	32	DIP	EPROM		3.5	5C/CB	SetSite	
27HC010	32	DIP	EPROM		3.5	5C/CB	Site 40/48	
27HC256	28	DIP	EPROM		2.5	5C/32	Site 40/48	
27HC256	28	DIP	EPROM		2.8	5C/32	SetSite	
28C16A	24	DIP	EEPROM		2.2	C4/96	SetSite	
28C16A	24	DIP	EEPROM		2.2	C4/96	Site 40/48	
28C17A	28	DIP	EEPROM		2.5	C4/A2	SetSite	
28C17A	28	DIP	EEPROM		2.5	C4/A2	Site 40/48	
28C256	28	DIP	EEPROM	36	3.2	BA/99	Site 40/48	
28C256	32	PLCC	EEPROM	36	3.8	0BA/0ED	ChipSite	
28C256	32	PLCC	EEPROM	36	3.8	0BA/0ED	PinSite	32 PIN PLCC MB
28C64A	28	DIP	EEPROM		3.2	CA/98	SetSite	
28C64A	28	DIP	EEPROM		3.2	CA/98	Site 40/48	
28C64B	28	DIP	EEPROM	36	3.9	232/098	Site 40/48	
28F010	32	DIP	FLASH		3.8	186/118	Site 40/48	
28F010	32	PLCC	FLASH		3.8	186/12A	ChipSite	
28F010	32	PLCC	FLASH		3.8	186/12A	PinSite	32 PIN PLCC MB
33C104	8	DIP	EEPROM		2.8	155/156	Site 40/48	
35C102	8	DIP	EEPROM		2.8	151/154	Site 40/48	
35C104	8	DIP	EEPROM		2.8	151/156	Site 40/48	
35C704	8	DIP	EEPROM		3.6	1CD/1E5	Site 40/48	
59C11	8	DIP	EEPROM		2.8	123/11D	Site 40/48	
93C46	8	DIP	EEPROM		3.6	118/10E	Site 40/48	
<b>Cypress Semiconductor, Inc.</b>								
100E301/16P8	24	DIP	PAL		3.9	C0/92	Site 40/48	
100E301/16P8	28	PLCC	PAL	28	3.9	0C0/792	ChipSite	
100E301/16P8	28	PLCC	PAL	28	3.9	0C0/792	PinSite	28 PIN PLCC MB
100E302/16P4	24	DIP	PAL		3.9	C0/A0	Site 40/48	
100E302/16P4	28	PLCC	PAL	28	3.9	0C0/7A0	ChipSite	
100E302/16P4	28	PLCC	PAL	28	3.9	0C0/7A0	PinSite	28 PIN PLCC MB
10E16P8	28	LCC	PAL	44	3.9	0C0/792	ChipSite	
10E16P8	28	LCC	PAL		3.9	0C0/792	PinSite	28 PIN PLCC MB
10E16P8	28	PLCC	PAL		3.9	0C0/792	ChipSite	
10E16P8	28	PLCC	PAL		3.9	0C0/792	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Cypress Semiconductor, Inc. (continued)</b>								
10E301	28	LCC	PAL	44	3.9	0C0/792	ChipSite	28 PIN PLCC MB
10E301	28	LCC	PAL		3.9	0C0/792	PinSite	
10E301	28	PLCC	PAL		3.9	0C0/792	ChipSite	28 PIN PLCC MB
10E301	28	PLCC	PAL		3.9	0C0/792	PinSite	
10E301/16P8	24	DIP	PAL		3.9	C0/92	Site 40/48	
10E302/16P4	24	DIP	PAL		3.9	C0/A0	Site 40/48	
16L8	20	DIP	PAL		3.0	28/17	Site 40/48	20 PIN LCC MB
16L8	20	LCC	PAL	44	3.2	028/717	ChipSite	
16L8	20	LCC	PAL		3.2	028/717	PinSite	
16L8-5	20	DIP	EPLD	28	3.8	4F/29	Site 40/48	
16L8-7	20	DIP	EPLD	28	3.8	4F/29	Site 40/48	
16R4	20	DIP	PAL		3.0	28/24	Site 40/48	20 PIN LCC MB
16R4	20	LCC	PAL	44	3.5	028/724	ChipSite	
16R4	20	LCC	PAL		3.5	028/724	PinSite	
16R4-5	20	DIP	EPLD	28	3.8	4F/32	Site 40/48	
16R4-7	20	DIP	EPLD	28	3.8	4A/32	Site 40/48	
16R6	20	DIP	PAL		3.0	28/24	Site 40/48	20 PIN LCC MB
16R6	20	LCC	PAL	44	3.5	028/724	ChipSite	
16R6	20	LCC	PAL		3.5	028/724	PinSite	
16R6-5	20	DIP	EPLD	28	3.8	4F/31	Site 40/48	
16R6-7	20	DIP	EPLD	28	3.8	4F/31	Site 40/48	
16R8	20	DIP	PAL		3.0	28/24	Site 40/48	20 PIN LCC MB
16R8	20	LCC	PAL	44	3.5	028/724	ChipSite	
16R8	20	LCC	PAL		3.5	028/724	PinSite	
16R8-5	20	DIP	EPLD	28	3.8	4F/30	Site 40/48	
16R8-7	20	DIP	EPLD	28	3.8	4F/30	Site 40/48	
18G8	20	DIP	PAL		3.1	BB/0F	Site 40/48	28 PIN PLCC MB
20G10-FN	28	PLCC	PAL		2.6	028/756	ChipSite	
20G10-FN	28	PLCC	PAL		3.0	028/756	PinSite	
20G10/A	24	DIP	PAL		3.0	28/56	Site 40/48	
20G10B	24	DIP	PAL		3.6	BB/56	Site 40/48	
20G10B	28	PLCC	PAL		3.6	0BB/756	ChipSite	28 PIN PLCC MB
20G10B	28	PLCC	PAL		3.6	0BB/756	PinSite	
20G10C	24	DIP	PAL	28	3.8	4F/66	Site 40/48	
20RA10	24	DIP	PAL		3.6	BB/45	Site 40/48	
20RA10	28	PLCC	PAL		3.6	0BB/745	ChipSite	
20RA10	28	PLCC	PAL		3.6	0BB/745	PinSite	28 PIN PLCC MB
22V10/A	24	DIP	PAL		3.0	28/28	Site 40/48	
22V10/A	28	LCC	PAL	44	3.0	028/728	ChipSite	28 PIN LCC MB
22V10/A	28	LCC	PAL		3.0	028/728	PinSite	
22V10/A	28	PLCC	PAL		3.0	028/728	ChipSite	28 PIN PLCC MB
22V10/A	28	PLCC	PAL		3.0	028/728	PinSite	
22V10B	24	DIP	EPLD		3.7	BB/28	Site 40/48	28 PIN PLCC MB
22V10B	28	JLCC	EPLD		3.6	0BB/728	ChipSite	
22V10B	28	JLCC	EPLD		3.6	0BB/728	PinSite	28 PIN PLCC MB
22V10B	28	PLCC	EPLD		3.6	0BB/728	ChipSite	
22V10B	28	PLCC	EPLD		3.6	0BB/728	PinSite	28 PIN PLCC MB
22V10C	24	DIP	PAL	28	3.2	4F/28	Site 40/48	
22V10C	28	PLCC	PAL	28	3.2	04F/728	ChipSite	28 PIN PLCC MB
22V10C	28	PLCC	PAL	28	3.2	04F/728	PinSite	
22V10D	24	DIP	FLASH		3.9	234/07F	Site 40/48	
22VP10C	24	DIP	PAL	28	3.2	4F/98	Site 40/48	28 PIN PLCC MB
22VP10C	28	PLCC	PAL	28	3.2	04F/798	ChipSite	
22VP10C	28	PLCC	PAL	28	3.2	04F/798	PinSite	
610	24	DIP	EPLD	28	3.8	2B9/0F6	Site 40/48	
7B333	28	DIP	EPLD	28	3.8	2B9/0F7	Site 48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Cypress Semiconductor, Inc. (continued)</b>								
7B336	28	DIP	PAL		3.8	1B9/0F8	Site 48	
7B336	28	PLCC	PAL		3.8	1B9/7F8	PinSite	28 PIN PLCC MB
7B337	28	DIP	PAL		3.8	1B9/0F9	Site 48	
7B338	28	DIP	PAL		3.5	1B9/0F8	Site 48	
7B338	28	PLCC	PAL		3.6	1B9/7F8	PinSite	28 PIN PLCC MB
7B339	28	DIP	PAL		3.5	1B9/0F9	Site 48	
7B339	28	PLCC	PAL		3.6	1B9/7F9	PinSite	28 PIN PLCC MB
7C225	24	DIP	PROM	45	2.2	F0/B6	Site 40/48	
7C225	28	LCC	PROM	44,45	3.1	0F0/17B	ChipSite	
7C225	28	LCC	PROM	45	3.1	0F0/17B	PinSite	28 PIN LCC MB
7C235	24	DIP	PROM	1,45	2.2	F0/B5	Site 40/48	
7C235	28	LCC	PROM	1,44,45	2.8	0F0/152	ChipSite	
7C235	28	LCC	PROM	1,45	3.0	0F0/152	PinSite	28 PIN LCC MB
7C235	28	PLCC	PROM	1,45	3.1	0F0/152	ChipSite	
7C235	28	PLCC	PROM	1,45	3.1	0F0/152	PinSite	28 PIN PLCC MB
7C245	24	DIP	PROM	3,45	2.2	F4/B0	Site 40/48	
7C245	24	SO	PROM	3,45	3.1	0F4/8B0	ChipSite	
7C245	24	SO	PROM	3,45	3.1	0F4/8B0	PinSite	SOIC_30
7C245	28	LCC	PROM	3,44,45	3.1	0F4/153	ChipSite	
7C245	28	LCC	PROM	3,45	3.1	0F4/153	PinSite	28 PIN LCC MB
7C245A	24	DIP	PROM	3	2.3	10B/0B0	Site 40/48	
7C245A	28	LCC	PROM	3	3.0	10B/7B0	PinSite	28 PIN LCC MB
7C245A	28	LCC	PROM	3,44	2.8	10B/7B0	ChipSite	
7C251	28	DIP	PROM		1.6	EB/E6	Site 40/48	
7C251	32	LCC	PROM	44	3.1	0EB/17C	ChipSite	
7C251	32	LCC	PROM		3.1	0EB/17C	PinSite	32 PIN LCC MB
7C253	28	DIP	PROM		1.6	EB/E6	Site 40/48	
7C254	28	DIP	PROM		1.6	EB/E6	Site 40/48	
7C261	24	DIP	PROM		3.9	0EF/031	SetSite	
7C261	24	DIP	PROM		3.9	0EF/031	Site 40/48	
7C261	28	LCC	PROM	44	3.9	0EF/17D	ChipSite	
7C261	28	LCC	PROM		3.9	0EF/17D	PinSite	28 PIN LCC MB
7C263	24	DIP	PROM		3.9	0EF/031	SetSite	
7C263	24	DIP	PROM		3.9	0EF/031	Site 40/48	
7C263	28	LCC	PROM	44	3.9	0EF/1E1	ChipSite	
7C263	28	LCC	PROM		3.9	0EF/1E1	PinSite	28 PIN LCC MB
7C263	28	PLCC	PROM		3.9	0EF/1E1	ChipSite	
7C263	28	PLCC	PROM		3.9	0EF/1E1	PinSite	28 PIN PLCC MB
7C264	24	DIP	PROM		3.9	0EF/031	Site 40/48	
7C265	28	DIP	PROM		2.8	ED/E5	Site 40/48	
7C266	28	DIP	PROM		3.9	0EF/12C	Site 40/48	
7C268	32	DIP	PROM	3	2.1	ED/E4	Site 40/48	
7C269	28	DIP	PROM	4	2.2	ED/E5	Site 40/48	
7C269	28	LCC	PROM	44	3.1	0ED/17E	ChipSite	
7C269	28	LCC	PROM		3.1	0ED/17E	PinSite	28 PIN LCC MB
7C271	28	DIP	PROM		3.0	142/13D	Site 40/48	
7C271	32	LCC	PROM	44	3.1	142/17F	ChipSite	
7C271	32	LCC	PROM		3.1	142/17F	PinSite	32 PIN LCC MB
7C274	28	DIP	PROM		3.0	142/13E	Site 40/48	
7C277	28	DIP	PROM	56	3.2	142/188	Site 40/48	
7C279	28	DIP	PROM	56	3.1	142/176	Site 40/48	
7C281	24	DIP	PROM		2.2	EE/B4	Site 40/48	
7C282	24	DIP	PROM		2.2	EE/B4	Site 40/48	
7C285	28	DIP	PROM		3.3	190/19D	Site 40/48	
7C285	32	LCC	PROM		3.4	190/1B8	PinSite	32 PIN LCC MB
7C286	28	DIP	PROM		3.3	190/1A0	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Cypress Semiconductor, Inc. (continued)</b>								
7C287	28	DIP	PROM	95	3.3	190/1A1	Site 40/48	
7C287	32	LCC	PROM	95	3.6	190/7A1	PinSite	32 PIN LCC MB
7C289	32	DIP	PROM	34,95	3.3	190/1A4	Site 48	
7C291	24	DIP	PROM		2.2	F2/AF	Site 40/48	
7C291	28	LCC	PROM	44	3.1	0F2/7AF	ChipSite	
7C291	28	LCC	PROM		3.1	0F2/7AF	PinSite	28 PIN LCC MB
7C291	28	PLCC	PROM		2.2	0F2/7AF	ChipSite	
7C291	28	PLCC	PROM		3.0	0F2/7AF	PinSite	28 PIN PLCC MB
7C291A	24	DIP	PROM		2.3	10C/0AF	Site 40/48	
7C291A	24	SO	PROM		3.4	10C/0AF	ChipSite	
7C291A	24	SO	PROM		3.4	10C/0AF	PinSite	SOIC_30
7C291A	28	PLCC	PROM		3.6	10C/1E2	ChipSite	
7C291A	28	PLCC	PROM		3.6	10C/1E2	PinSite	28 PIN PLCC MB
7C292	24	DIP	PROM		2.2	F2/AF	Site 40/48	
7C292A	24	DIP	PROM		2.3	10C/0AF	Site 40/48	
7C293A	24	DIP	PROM		2.8	10C/0AF	Site 40/48	
7C330	28	DIP	EPLD		2.8	28/1A	Site 40/48	
7C330	28	JLCC	EPLD	28	3.2	028/71A	PinSite	28 PIN PLCC MB
7C330	28	LCC	EPLD	28	3.2	028/71A	PinSite	28 PIN LCC MB
7C330	28	PLCC	EPLD	28	3.2	028/71A	PinSite	28 PIN PLCC MB
7C331	28	DIP	EPLD		2.8	28/5C	Site 40/48	
7C331	28	LCC	EPLD	28	3.2	028/75C	PinSite	28 PIN LCC MB
7C331	28	PLCC	EPLD	28	3.2	028/75C	PinSite	28 PIN PLCC MB
7C331	32	JLCC	EPLD	28	3.6	028/75c	PinSite	32 PIN PLCC MB
7C332	28	DIP	EPLD		2.8	28/8B	Site 40/48	
7C332	28	JLCC	EPLD		3.5	028/78B	PinSite	28 PIN PLCC MB
7C332	28	LCC	EPLD		3.5	028/78B	PinSite	28 PIN LCC MB
7C332	28	PLCC	EPLD		3.5	028/78B	PinSite	28 PIN PLCC MB
7C342	68	JLCC	EPLD	54	3.8	180/0B7	PinSite	68 PIN PLCC MB
7C342	68	PGA	EPLD	54	3.8	18B/1B0	PinSite	
7C342	68	PLCC	EPLD	54	3.8	180/0B7	PinSite	68 PIN PLCC MB
7C342	68	QFP	EPLD	54	3.8	180/0B7	PinSite	PPI-0517
7C343	44	JLCC	EPLD	54	3.3	180/0B8	PinSite	44 PIN PLCC MB
7C344	28	DIP	EPLD	55	3.9	180/0AE	Site 48	
7C344	28	JLCC	EPLD	55	3.9	180/7AE	PinSite	28 PIN PLCC MB
7C344	28	PLCC	EPLD	55	3.9	180/7AE	PinSite	28 PIN PLCC MB
7C361	28	DIP	EPLD		3.6	1BA/0FA	Site 48	
7C361	28	JLCC	EPLD		3.7	1BA/7FA	PinSite	28 PIN PLCC MB
<b>Exel Microelectronics, Inc.</b>								
2804	24	DIP	EEPROM		2.1	B7/82	Site 40/48	
2804	24	DIP	EEPROM		2.8	B7/82	SetSite	
2804A	24	DIP	EEPROM		3.2	B7/82	SetSite	
2804A	24	DIP	EEPROM		3.2	B7/82	Site 40/48	
2816A	24	DIP	EEPROM		2.1	B7/23	SetSite	
2816A	24	DIP	EEPROM		2.1	B7/23	Site 40/48	
2816A	32	PLCC	EEPROM		3.2	0B7/15C	ChipSite	
2816A	32	PLCC	EEPROM		3.2	0B7/15C	PinSite	32 PIN PLCC MB
2864A	28	DIP	EEPROM		2.5	C3/98	SetSite	
2864A	28	DIP	EEPROM		2.5	C3/98	Site 40/48	
2864A	32	PLCC	EEPROM		3.3	C3/5D	ChipSite	
2864A	32	PLCC	EEPROM		3.3	C3/5D	PinSite	32 PIN PLCC MB
2865A	28	DIP	EEPROM		2.5	C3/98	SetSite	
2865A	28	DIP	EEPROM		2.5	C3/98	Site 40/48	
2865A	32	PLCC	EEPROM		3.3	C3/5D	PinSite	32 PIN PLCC MB



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
Exel Microelectronics, Inc. (continued)								
28C16A	24	DIP	EEPROM		3.5	C4/96	Site 40/48	
46C15	24	DIP	EEPROM	31	1.4	CD/21	Site 40/48	
46C15	24	DIP	EEPROM	31	2.0	CD/21	SetSite	
46C16	24	DIP	EEPROM	31	2.5	CD/21	SetSite	
46C16	24	DIP	EEPROM	31	2.5	CD/21	Site 40/48	
78C800	24	DIP	ERASIC		2.1	76/2A	Site 40/48	
78C800	28	PLCC	ERASIC		2.1	076/72A	ChipSite	28 PIN PLCC MB
78C800	28	PLCC	ERASIC		3.0	076/72A	PinSite	
93C46	8	DIP	EEPROM		3.2	118/10E	Site 40/48	
Fairchild Semiconductor Corp.								
16L8	20	DIP	PAL		2.0	07/17	Site 40/48	
16P8	20	DIP	PAL		2.0	07/30	Site 40/48	
16R4	20	DIP	PAL		2.0	07/24	Site 40/48	
16R6	20	DIP	PAL		2.0	07/24	Site 40/48	
16R8	20	DIP	PAL		2.0	07/24	Site 40/48	
16RP4	20	DIP	PAL		2.0	07/31	Site 40/48	
16RP6	20	DIP	PAL		2.0	07/31	Site 40/48	
16RP8	20	DIP	PAL		2.0	07/31	Site 40/48	
2708	24	DIP	EPROM		2.0	21/27	SetSite	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
93438	24	DIP	PROM		3.0	01/15	Site 40/48	
93448	24	DIP	PROM		3.0	01/15	Site 40/48	
93451	24	DIP	PROM		2.2	01/16	Site 40/48	
93510	24	DIP	PROM		2.2	01/21	Site 40/48	
93511	24	DIP	PROM		2.2	01/21	Site 40/48	
93Z450	24	DIP	PROM		2.2	A4/16	Site 40/48	
93Z451	24	DIP	PROM		1.0	A4/16	Site 40/48	
93Z458	28	DIP	FPLA		2.0	07/61	Site 40/48	
93Z459	28	DIP	FPLA		2.0	07/61	Site 40/48	
93Z510	24	DIP	PROM		1.6	A4/21	Site 40/48	
93Z511	24	DIP	PROM		1.0	A4/21	Site 40/48	
93Z564	24	DIP	PROM		2.2	A3/67	Site 40/48	
93Z565	24	DIP	PROM		2.2	A3/67	Site 40/48	
93Z565	24	LCC	PROM	44	2.2	0A3/767	ChipSite	28 PIN LCC MB
93Z565	24	LCC	PROM		3.0	0A3/767	PinSite	
93Z665	24	DIP	PROM		2.2	A0/3E	Site 40/48	
93Z667	24	DIP	PROM		2.2	A0/3E	Site 40/48	
Fujitsu Microelectronics, Inc.								
27128	28	DIP	EPROM		2.0	45/51	SetSite	
27128	28	DIP	EPROM		2.0	45/51	Site 40/48	
2716	24	DIP	EPROM		2.0	19/23	SetSite	
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
27256	28	DIP	EPROM		2.1	93/32	SetSite	
27256	28	DIP	EPROM		2.1	93/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
2764	28	DIP	EPROM		2.0	45/33	SetSite	
2764	28	DIP	EPROM		2.0	45/33	Site 40/48	
27C1000	32	DIP	EPROM		2.0	6C/CC	SetSite	
27C1000	32	DIP	EPROM		2.0	6C/CC	Site 40/48	
27C1000	32	JLCC	EPROM		3.8	06C/127	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Fujitsu Microelectronics, Inc. (continued)</b>								
27C1000	32	JLCC	EPROM		3.8	06C/127	PinSite	32 PIN PLCC MB SOIC_45
27C1000	32	SO	EPROM		3.9	06C/8CC	PinSite	
27C1000A	32	DIP	EPROM		3.8	1FE/0CC	Site 40/48	
27C1001	32	DIP	EPROM		2.0	6C/CB	SetSite	
27C1001	32	DIP	EPROM		2.0	6C/CB	Site 40/48	
27C1001	32	JLCC	EPROM		3.0	6C/DE	ChipSite	
27C1001	32	JLCC	EPROM		3.0	6C/DE	PinSite	32 PIN PLCC MB SOIC_45
27C1001	32	SO	EPROM		3.9	06C/86C	PinSite	
27C1001A	32	DIP	EPROM		3.8	1FE/0CB	Site 40/48	
27C1024	40	DIP	EPROM		2.0	6D/A8	SetSite	
27C1024	40	DIP	EPROM		2.1	6D/A8	Site 40/48	
27C1024	44	LCC	EPROM	44	2.8	6D/88	ChipSite	44 PIN LCC MB
27C1024	44	LCC	EPROM		3.0	6D/88	PinSite	
27C1024	44	PLCC	EPROM		3.8	6D/88	ChipSite	
27C1024	44	PLCC	EPROM		3.8	6D/88	PinSite	44 PIN PLCC MB
27C1024A	40	DIP	EPROM		3.8	200/0A8	Site 40/48	
27C1028	28	DIP	EPROM		2.3	69/0D	Site 40/48	
27C1028	32	LCC	EPROM	44	2.8	069/157	ChipSite	32 PIN LCC MB
27C1028	32	LCC	EPROM		3.0	069/157	PinSite	
27C128	28	DIP	EPROM		2.0	45/51	SetSite	
27C128	28	DIP	EPROM		2.0	45/51	Site 40/48	
27C128	32	LCC	EPROM	44	2.7	45/C2	ChipSite	
27C128	32	LCC	EPROM		3.0	45/C2	PinSite	32 PIN LCC MB
27C2000	32	DIP	EPROM		3.8	1FE/1FD	Site 40/48	
27C2001	32	DIP	EPROM		3.8	1FE/0F5	Site 40/48	
27C2048	40	DIP	EPROM		3.8	200/0DF	Site 40/48	
27C256	28	DIP	EPROM		2.0	45/32	SetSite	SOIC_35
27C256	28	DIP	EPROM		2.0	45/32	Site 40/48	
27C256A	28	DIP	EPROM		2.1	93/32	SetSite	
27C256A	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C256A	28	SO	EPROM		3.9	093/832	PinSite	
27C256A	32	LCC	EPROM	44	2.8	93/C3	ChipSite	32 PIN LCC MB
27C256A	32	LCC	EPROM		3.0	93/C3	PinSite	
27C256H	28	DIP	EPROM		2.1	93/32	SetSite	
27C256H	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C32A	24	DIP	EPROM		2.0	27/24	Site 40/48	
27C4000	32	DIP	EPROM		3.4	1A8/1BE	Site 40/48	
27C4001	32	DIP	EPROM		3.4	1A8/0F6	Site 40/48	
27C4096	40	DIP	EPROM		3.4	1A9/089	Site 40/48	
27C512	28	DIP	EPROM		2.0	4B/A4	SetSite	
27C512	28	DIP	EPROM		2.0	4B/A4	Site 40/48	
27C512	32	LCC	EPROM		2.0	04B/7A4	ChipSite	32 PIN LCC MB
27C512	32	LCC	EPROM		3.0	04B/7A4	PinSite	
27C512HW	28	DIP	EPROM		3.8	1D4/0A4	Site 40/48	
27C64	28	DIP	EPROM		2.0	45/33	SetSite	
27C64	28	DIP	EPROM		2.0	45/33	Site 40/48	
27C64	28	SO	EPROM		3.9	045/833	PinSite	SOIC_35
27C64	32	LCC	EPROM	44	3.0	45/C1	ChipSite	
27C64	32	LCC	EPROM		3.0	45/C1	PinSite	
28C64	28	DIP	EEPROM		2.0	C3/98	SetSite	
28C64	28	DIP	EEPROM		2.0	C3/98	Site 40/48	
28C65	28	DIP	EEPROM		2.0	C3/98	SetSite	
28C65	28	DIP	EEPROM		2.0	C3/98	Site 40/48	
28F010	32	DIP	FLASH		3.9	186/118	Site 40/48	
7051	16	DIP	PROM		1.7	78/02	Site 40/48	
7052	16	DIP	PROM		3.6	78/01	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Fujitsu Microelectronics, Inc. (continued)</b>								
7056	16	DIP	PROM		1.7	78/02	Site 40/48	
7111	16	DIP	PROM		2.2	68/02	Site 40/48	
7112	16	DIP	PROM		2.2	68/02	Site 40/48	
7112	20	LCC	PROM	44	3.1	68/6C	ChipSite	20 PIN LCC MB
7112	20	LCC	PROM		3.1	68/6C	PinSite	
7113/L	16	DIP	PROM		2.2	68/01	Site 40/48	
7114/L	16	DIP	PROM		2.2	68/01	Site 40/48	
7115	16	DIP	PROM		2.2	68/03	Site 40/48	
7116	16	DIP	PROM		2.2	68/03	Site 40/48	
7117	20	DIP	PROM		2.2	68/08	Site 40/48	
7118	20	DIP	PROM		2.2	68/08	Site 40/48	
7118	20	SO	PROM		3.1	068/808	ChipSite	SOIC_30
7118	20	SO	PROM		3.1	068/808	PinSite	
7121	18	DIP	PROM		2.2	68/05	Site 40/48	
7122	18	DIP	PROM		2.2	68/05	Site 40/48	
7123	20	DIP	PROM		2.2	68/09	Site 40/48	
7124	20	DIP	PROM		2.2	68/09	Site 40/48	
7127	18	DIP	PROM		2.2	68/06	Site 40/48	
7128	18	DIP	PROM		2.2	68/06	Site 40/48	
7129	22	DIP	PROM		2.2	68/A9	Site 40/48	
7130	22	DIP	PROM		2.2	68/A9	Site 40/48	
7131	24	DIP	PROM		2.2	68/16	Site 40/48	
7132	24	DIP	PROM		2.2	68/16	Site 40/48	
7133	20	DIP	PROM		2.2	68/EA	Site 40/48	
7134	20	DIP	PROM		2.2	68/EA	Site 40/48	
7135	22	DIP	PROM		2.2	68/AA	Site 40/48	
7136	22	DIP	PROM		2.2	68/AA	Site 40/48	
7137	24	DIP	PROM		2.2	68/21	Site 40/48	
7138	24	DIP	PROM		2.2	68/21	Site 40/48	
7138	28	LCC	PROM	44	2.8	68/8B	ChipSite	28 PIN LCC MB
7138	28	LCC	PROM		3.0	68/8B	PinSite	
7141	24	DIP	PROM		2.2	68/63	Site 40/48	
7142	24	DIP	PROM		2.2	68/63	Site 40/48	
7143	24	DIP	PROM		2.2	68/67	Site 40/48	
7144	24	DIP	PROM		2.2	68/67	Site 40/48	
7151	20	DIP	PROM		2.2	68/53	Site 40/48	
7152	20	DIP	PROM		2.2	68/53	Site 40/48	
7154	24	DIP	PROM		3.4	68/69	Site 40/48	
71A38	24	DIP	PROM		3.6	1DC/021	Site 40/48	
71C256	28	DIP	PROM		3.6	1B3/1BF	Site 40/48	
71C44	24	DIP	PROM		3.6	128/067	Site 40/48	
71C46	28	DIP	PROM		3.6	128/078	Site 40/48	
7225RA/RS	24	DIP	PROM		2.5	68/B1	Site 40/48	
7226RA/RS	24	DIP	PROM		2.5	68/B1	Site 40/48	
7231RA/RS	24	DIP	PROM	1	2.5	68/B2	Site 40/48	
7232RA/RS	24	DIP	PROM	1	2.5	68/B2	Site 40/48	
7237RA/RS	24	DIP	PROM	1	2.5	68/77	Site 40/48	
7238RA/RS	24	DIP	PROM	1	2.5	68/77	Site 40/48	
7241RA/RS	24	DIP	PROM	1	2.5	68/B3	Site 40/48	
7242RA/RS	24	DIP	PROM	1	2.5	68/B3	Site 40/48	
8516	24	DIP	EPROM		2.0	19/23	Site 40/48	
8516	24	DIP	EPROM		2.8	19/23	SetSite	
8518	24	DIP	EPROM		2.0	21/27	Site 40/48	
8532	24	DIP	EPROM		2.0	19/24	Site 40/48	
8541P	8	DIP	PROM		3.0	14C/14D	Site 40/48	
8742H/N	40	DIP	MICRO		1.5	50/57	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Fujitsu Microelectronics, Inc. (continued)</b>								
98A608A	68	CARD	EPROM	91	3.3	6C/CB	Site 40/48	
98A609A	68	CARD	EPROM	91	3.3	6C/CB	Site 40/48	
98A610A	68	CARD	EPROM	91	3.2	6C/CB	Site 40/48	
MB98A6070	68	CARD	EPROM	117	3.4	1A3/0A4	Site 40/48	
MB98A6080	68	CARD	EPROM	117	3.4	1A3/0A4	Site 40/48	
MB98A6090	68	CARD	EPROM	117	3.4	1A3/0A4	Site 40/48	
MB98A6100	68	CARD	EPROM	117	3.4	1A3/0A4	Site 40/48	
<b>Goldstar Co. Ltd.</b>								
57HC64	24	DIP	EPROM		2.2	2B/67	SetSite	
57HC64	24	DIP	EPROM		2.2	2B/67	Site 40/48	
<b>Gould AMI Semiconductors</b>								
153	20	DIP	PEEL	33	2.6	7D/65	Site 40/48	
173	24	DIP	PEEL		2.5	7D/76	Site 40/48	
18CV8	20	DIP	PEEL		1.4	7D/3A	Site 40/48	
18CV8	20	PLCC	PEEL		2.7	07D/73A	ChipSite	
18CV8	20	PLCC	PEEL		3.0	07D/73A	PinSite	20 PIN PLCC MB
20CG10	24	DIP	PEEL	33	2.5	7D/56	Site 40/48	
20CG10	28	PLCC	PEEL		3.5	08D/756	ChipSite	
20CG10	28	PLCC	PEEL		3.5	08D/756	PinSite	28 PIN PLCC MB
22CV10	24	DIP	PEEL		2.5	7D/28	Site 40/48	
22CV10	28	PLCC	PEEL		2.7	07D/728	ChipSite	
22CV10	28	PLCC	PEEL		3.0	07D/728	PinSite	28 PIN PLCC MB
22CV10Z	24	DIP	PEEL		2.6	7D/A3	Site 40/48	
22CV10Z	28	PLCC	PEEL		2.7	07D/7A3	ChipSite	
22CV10Z	28	PLCC	PEEL		3.0	07D/7A3	PinSite	28 PIN PLCC MB
253	20	DIP	PEEL		2.5	7D/85	Site 40/48	
273	24	DIP	PEEL		2.5	7D/86	Site 40/48	
<b>Harris Corporation</b>								
6617	24	DIP	PROM		3.9	89/75	Site 40/48	
6617RH	24	DIP	PROM		3.9	12F/075	Site 40/48	
6641	24	DIP	PROM		3.9	40/47	Site 40/48	
6642	24	DIP	PROM		3.9	3F/47	Site 40/48	
6642/883	28	LCC	PROM		3.8	03F/847	PinSite	28 PIN LCC MB
7602	16	DIP	PROM		2.2	06/02	Site 40/48	
7603	16	DIP	PROM		2.2	06/02	Site 40/48	
7610	16	DIP	PROM		2.2	06/01	Site 40/48	
7611	16	DIP	PROM		2.2	06/01	Site 40/48	
76161	24	DIP	PROM		1.4	06/21	Site 40/48	
76165	20	DIP	PROM		2.2	06/53	Site 40/48	
7620	16	DIP	PROM		2.2	06/03	Site 40/48	
7621	16	DIP	PROM		2.2	06/03	Site 40/48	
76321	24	DIP	PROM		2.2	06/63	Site 40/48	
7640	24	DIP	PROM		2.2	06/15	Site 40/48	
7641	24	DIP	PROM		2.2	06/15	Site 40/48	
7642	18	DIP	PROM		2.2	06/05	Site 40/48	
7643	18	DIP	PROM		2.2	06/05	Site 40/48	
7649	20	DIP	PROM		2.2	06/09	Site 40/48	
76641	24	DIP	PROM		2.2	06/67	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Harris Corporation (continued)</b>								
7681	24	DIP	PROM		2.2	06/16	Site 40/48	
<b>Hitachi, Ltd.</b>								
27128A	28	DIP	EPROM		2.1	93/51	SetSite	
27128A	28	DIP	EPROM		2.1	93/51	Site 40/48	
27256	28	DIP	EPROM		2.1	93/32	SetSite	
27256	28	DIP	EPROM		2.1	93/32	Site 40/48	
27512	28	DIP	EPROM		2.0	4B/A4	SetSite	
27512	28	DIP	EPROM		2.0	4B/A4	Site 40/48	
27C101	32	DIP	EPROM		2.8	8F/CB	SetSite	
27C101	32	DIP	EPROM		2.8	8F/CB	Site 40/48	
27C101A	32	DIP	EPROM		3.1	8F/CB	Site 40/48	
27C1024	40	DIP	EPROM		2.8	8E/A8	SetSite	
27C1024	40	DIP	EPROM		2.8	8E/A8	Site 40/48	
27C1024	44	JLCC	EPROM		3.0	8E/88	ChipSite	44 PIN PLCC MB
27C1024	44	JLCC	EPROM		3.0	8E/88	PinSite	
27C256	28	DIP	EPROM		2.1	93/32	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C256	28	SO	EPROM		3.9	093/832	PinSite	SOIC_35
27C256H	28	DIP	EPROM		2.1	111/032	SetSite	
27C256H	28	DIP	EPROM		2.1	111/032	Site 40/48	
27C301	32	DIP	EPROM		2.8	8F/CC	SetSite	
27C301	32	DIP	EPROM		2.8	8F/CC	Site 40/48	
27C301A	32	DIP	EPROM		3.1	8F/CC	Site 40/48	
27C4001	32	DIP	EPROM		3.4	1AA/0F6	Site 40/48	
27C4096	40	DIP	EPROM		3.0	163/089	Site 40/48	
27C4096	44	JLCC	EPROM		3.4	163/1C7	ChipSite	44 PIN PLCC MB
27C4096	44	JLCC	EPROM		3.4	163/1C7	PinSite	
27C4096	44	PLCC	EPROM		3.4	163/1C7	ChipSite	44 PIN PLCC MB
27C4096	44	PLCC	EPROM		3.4	163/1C7	PinSite	
27C64	28	DIP	EPROM		2.0	79/33	SetSite	
27C64	28	DIP	EPROM		2.0	79/33	Site 40/48	
29C101	32	DIP	FLASH		3.4	19A/1AA	Site 40/48	
29C101B	32	DIP	EEPROM		3.6	1D7/118	Site 40/48	
4074019	64	SDIP	MICRO	83	3.2	93/32	Site 40/48	
4074608FS	80	QFP	MICRO	63	3.2	93/32	Site 40/48	
4074608H	80	QFP	MICRO	104	3.3	93/32	Site 40/48	
4074709	64	SDIP	MICRO	64	3.2	93/32	Site 40/48	
4074729	64	SDIP	MICRO	103	3.3	93/32	Site 40/48	
4074808FS	80	QFP	MICRO	63	3.2	93/32	Site 40/48	
4074808H	80	QFP	MICRO	104	3.3	93/32	Site 40/48	
462532	24	DIP	EPROM		2.0	19/25	SetSite	
462532	24	DIP	EPROM		2.0	19/25	Site 40/48	
462716	24	DIP	EPROM		2.0	19/23	SetSite	
462716	24	DIP	EPROM		2.0	19/23	Site 40/48	
462732	24	DIP	EPROM		2.0	19/24	SetSite	
462732	24	DIP	EPROM		2.0	19/24	Site 40/48	
48016	24	DIP	EEPROM		2.0	33/23	SetSite	
48016	24	DIP	EEPROM		2.0	33/23	Site 40/48	
4827128	28	DIP	EPROM		2.0	79/51	SetSite	
4827128	28	DIP	EPROM		2.0	79/51	Site 40/48	
482732A	24	DIP	EPROM		2.0	27/24	SetSite	
482732A	24	DIP	EPROM		2.0	27/24	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Hitachi, Ltd. (continued)</b>								
482764	28	DIP	EPROM		2.0	79/33	SetSite	
482764	28	DIP	EPROM		2.0	79/33	Site 40/48	
58064	28	DIP	EEPROM		2.0	D7/98	SetSite	
58064	28	DIP	EEPROM		2.0	D7/98	Site 40/48	
58C256	28	DIP	EEPROM		3.1	16E/099	Site 40/48	
58C65	28	DIP	EEPROM		2.5	CA/A6	SetSite	
58C65	28	DIP	EEPROM		2.5	CA/A6	Site 40/48	
63701V0	40	DIP	MICRO		3.5	93/CF	Site 40/48	
63701X0	64	DIP	MICRO	13	2.0	27/24	Site 40/48	
63701Y0	64	DIP	MICRO	14	2.1	93/E8	Site 40/48	
63705V0	40	DIP	MICRO		3.5	93/D0	Site 40/48	
63705Z0	80	FP	MICRO	16	1.4	93/EB	Site 40/48	
637A01V0	40	DIP	MICRO		3.5	93/CF	Site 40/48	
637A01X0	64	DIP	MICRO	13	2.0	27/24	Site 40/48	
637A01Y0	64	DIP	MICRO	14	2.1	93/E8	Site 40/48	
637A05V0	40	DIP	MICRO		3.5	93/D0	Site 40/48	
637A05Z0	80	FP	MICRO	16	1.4	93/EB	Site 40/48	
637B01V0	40	DIP	MICRO		3.5	93/CF	Site 40/48	
637B01X0	64	DIP	MICRO	13	2.0	27/24	Site 40/48	
637B01Y0	64	DIP	MICRO	14	2.1	93/E8	Site 40/48	
637B05V0	40	DIP	MICRO		3.5	93/D0	Site 40/48	
637B05Z0	80	FP	MICRO	16	1.4	93/EB	Site 40/48	
647180X	80	QFP	MICRO	62	3.2	93/32	Site 40/48	
647180X	84	LCC	MICRO		3.3	17A/185	PinSite	84 PIN LCC MB
6473258	64	SDIP	MICRO	80	3.3	93/32	Site 40/48	
6473308	80	QFP	MICRO	61	3.2	93/32	Site 40/48	
6473308	84	LCC	MICRO		3.4	17A/1B6	PinSite	84 PIN LCC MB
6475208	64	SDIP	MICRO	82	3.3	93/32	Site 40/48	
6475328	84	LCC	MICRO		3.4	17A/1B7	PinSite	84 PIN LCC MB
6475328	84	QFP	MICRO	59	3.2	93/32	Site 40/48	
817820	40	DIP	MICRO	134	3.6	1D8/1DE	Site 40/48	
8178232	68	PLCC	MICRO	135	3.6	111/032	Site 40/48	
<b>Hyundai Electronics Industries Co., Ltd.</b>								
18CV8	20	DIP	EEPLD		2.6	E4/3A	Site 40/48	
27C64	28	DIP	EPROM		1.6	F8/33	Site 40/48	
27C64	28	DIP	EPROM		2.8	F8/33	SetSite	
93C46	8	DIP	EEPROM		2.8	118/10E	Site 40/48	
<b>Integrated Device Technology, Inc.</b>								
78C16A	24	DIP	EEPROM		2.1	C4/96	Site 40/48	
<b>Intel Corporation</b>								
22V10	24	DIP	EPLD	151	3.7	2DB/229	Site 40/48	
22V10	28	PLCC	EPLD	151	3.7	2DB/529	ChipSite	
22V10	28	PLCC	EPLD	151	3.7	2DB/529	PinSite	28 PIN PLCC MB
27010	32	DIP	EPROM		2.0	5C/CB	SetSite	
27010	32	DIP	EPROM		2.0	5C/CB	Site 40/48	
27011	28	DIP	EPROM		2.0	5C/C9	SetSite	
27011	28	DIP	EPROM		2.0	5C/C9	Site 40/48	
2708	24	DIP	EPROM		2.0	21/27	SetSite	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
27128	28	DIP	EPROM		2.0	79/51	SetSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation (continued)</b>								
27128	28	DIP	EPROM		2.0	79/51	Site 40/48	
27128A	28	DIP	EPROM		2.1	93/51	SetSite	
27128A	28	DIP	EPROM		2.1	93/51	Site 40/48	
27128B	28	DIP	EPROM		2.1	93/51	SetSite	
27128B	28	DIP	EPROM		2.1	93/51	Site 40/48	
2716	24	DIP	EPROM		2.0	19/23	SetSite	
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
27210	40	DIP	EPROM		2.0	5F/A8	SetSite	
27210	40	DIP	EPROM		2.1	5F/A8	Site 40/48	
27210	44	JLCC	EPROM		2.6	5F/88	ChipSite	
27210	44	JLCC	EPROM		3.0	5F/88	PinSite	44 PIN PLCC MB
27210	44	PLCC	EPROM		2.6	5F/88	ChipSite	
27210	44	PLCC	EPROM		3.0	5F/88	PinSite	44 PIN PLCC MB
27256	28	DIP	EPROM		2.1	93/32	SetSite	
27256	28	DIP	EPROM		2.1	93/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
27512	28	DIP	EPROM		2.0	4B/A4	SetSite	
27512	28	DIP	EPROM		2.0	4B/A4	Site 40/48	
27512	32	PLCC	EPROM		2.2	5E/C4	ChipSite	
27512	32	PLCC	EPROM		3.0	5E/C4	PinSite	32 PIN PLCC MB
27513	28	DIP	EPROM		2.0	5B/5E	SetSite	
27513	28	DIP	EPROM		2.0	5B/5E	Site 40/48	
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
2764A	28	DIP	EPROM		2.1	93/33	SetSite	
2764A	28	DIP	EPROM		2.1	93/33	Site 40/48	
27960	44	JLCC	EPROM		3.0	143/13F	PinSite	44 PIN PLCC MB
27960	44	PLCC	EPROM		3.4	143/13F	PinSite	44 PIN PLCC MB
27C010	32	DIP	EPROM		2.4	5C/CB	Site 40/48	
27C010	32	DIP	EPROM		2.8	5C/CB	SetSite	
27C010	32	PLCC	EPROM		2.4	5C/DE	ChipSite	
27C010	32	PLCC	EPROM		3.0	5C/DE	PinSite	32 PIN PLCC MB
27C010A	32	DIP	EPROM		3.1	160/0CB	SetSite	
27C010A	32	DIP	EPROM		3.1	160/0CB	Site 40/48	
27C011	28	DIP	EPROM		3.0	5C/C9	Site 40/48	
27C011	28	DIP	EPROM		3.1	5C/C9	SetSite	
27C020	32	DIP	EPROM		2.7	5C/F5	SetSite	
27C020	32	DIP	EPROM		2.7	5C/F5	Site 40/48	
27C020	32	PLCC	EPROM		3.1	05C/12D	ChipSite	
27C020	32	PLCC	EPROM		3.1	05C/12D	PinSite	32 PIN PLCC MB
27C040	32	DIP	EPROM		3.1	5C/F6	SetSite	
27C040	32	DIP	EPROM		3.1	5C/F6	Site 40/48	
27C100	32	DIP	EPROM		3.0	5C/CC	SetSite	
27C100	32	DIP	EPROM		3.0	5C/CC	Site 40/48	
27C128	28	DIP	EPROM		2.0	5C/51	Site 40/48	
27C128	28	DIP	EPROM		2.8	5C/51	SetSite	
27C128	32	PLCC	EPROM		2.6	5C/C2	ChipSite	
27C128	32	PLCC	EPROM		3.0	5C/C2	PinSite	32 PIN PLCC MB
27C202	40	DIP	EPROM		2.4	7E/DD	Site 40/48	
27C202	44	JLCC	EPROM		3.2	7E/AB	ChipSite	
27C202	44	JLCC	EPROM		3.2	7E/AB	PinSite	44 PIN PLCC MB
27C202	44	PLCC	EPROM		2.8	7E/AB	ChipSite	
27C202	44	PLCC	EPROM		3.0	7E/AB	PinSite	44 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation (continued)</b>								
27C203	40	DIP	EPROM	3	2.5	A7/4C	Site 40/48	
27C203	44	JLCC	EPROM	3	3.0	A7/4D	ChipSite	
27C203	44	JLCC	EPROM	3	3.0	A7/4D	PinSite	44 PIN PLCC MB
27C203	44	PLCC	EPROM	3	2.6	A7/4D	ChipSite	
27C203	44	PLCC	EPROM	3	3.0	A7/4D	PinSite	44 PIN PLCC MB
27C210	40	DIP	EPROM		2.6	5F/A8	SetSite	
27C210	40	DIP	EPROM		2.6	5F/A8	Site 40/48	
27C210	44	PLCC	EPROM		3.0	5F/88	ChipSite	
27C210	44	PLCC	EPROM		3.0	5F/88	PinSite	44 PIN PLCC MB
27C213	40	DIP	EPROM	48	2.8	136/136	Site 40/48	
27C220	40	DIP	EPROM		2.6	5F/DF	Site 40/48	
27C220	40	DIP	EPROM		3.0	5F/DF	SetSite	
27C220	44	PLCC	EPROM		3.1	05F/173	ChipSite	
27C220	44	PLCC	EPROM		3.1	05F/173	PinSite	44 PIN PLCC MB
27C240	40	DIP	EPROM		2.6	5F/89	Site 40/48	
27C240	40	DIP	EPROM		3.0	5F/89	SetSite	
27C256	28	DIP	EPROM		2.0	5C/32	SetSite	
27C256	28	DIP	EPROM		2.0	5C/32	Site 40/48	
27C256	32	PLCC	EPROM		2.0	5C/C3	ChipSite	
27C256	32	PLCC	EPROM		3.0	5C/C3	PinSite	32 PIN PLCC MB
27C256A	28	DIP	EPROM		2.6	5C/32	SetSite	
27C256A	28	DIP	EPROM		2.6	5C/32	Site 40/48	
27C256A	32	PLCC	EPROM		2.6	5C/C3	ChipSite	
27C256A	32	PLCC	EPROM		3.0	5C/C3	PinSite	32 PIN PLCC MB
27C400	40	DIP	EPROM		3.2	05F/172	Site 40/48	
27C512	28	DIP	EPROM		2.7	5E/A4	Site 40/48	
27C512	28	DIP	EPROM		3.0	5E/A4	SetSite	
27C513	28	DIP	EPROM		3.4	1A4/05E	Site 40/48	
27C64	28	DIP	EPROM		2.1	93/33	SetSite	
27C64	28	DIP	EPROM		2.1	93/33	Site 40/48	
27C64	32	PLCC	EPROM		2.1	5C/C1	ChipSite	
27C64	32	PLCC	EPROM		3.0	5C/C1	PinSite	32 PIN PLCC MB
27C800	42	DIP	EPROM	34	3.3	199/1A9	Site 48	
27F256	28	DIP	EPROM		2.2	0A8/109	Site 40/48	
27F64	28	DIP	EPROM		2.1	84/33	Site 40/48	
2815	24	DIP	EEPROM		2.0	85/23	SetSite	
2815	24	DIP	EEPROM		2.0	85/23	Site 40/48	
2816	24	DIP	EEPROM		2.0	37/23	SetSite	
2816	24	DIP	EEPROM		2.0	37/23	Site 40/48	
2816A	24	DIP	EEPROM		2.1	A5/96	SetSite	
2816A	24	DIP	EEPROM		2.1	A5/96	Site 40/48	
2817A	28	DIP	EEPROM		2.5	BF/A2	SetSite	
2817A	28	DIP	EEPROM		2.5	BF/A2	Site 40/48	
2864A	28	DIP	EEPROM		2.5	CC/98	SetSite	
2864A	28	DIP	EEPROM		2.5	CC/98	Site 40/48	
28F001BX-B	32	DIP	FLASH	108	3.4	19B/1AB	Site 40/48	
28F001BX-B	32	PLCC	FLASH	108	3.5	19B/1DB	ChipSite	
28F001BX-B	32	PLCC	FLASH	108	3.5	19B/1DB	PinSite	32 PIN PLCC MB
28F001BX-B	32	TSOP	FLASH		3.8	19B/BAB	PinSite	PPI-0702
28F001BX-T	32	DIP	FLASH	108	3.4	19C/1AB	Site 40/48	
28F001BX-T	32	PLCC	FLASH	108	3.5	19C/1DB	ChipSite	
28F001BX-T	32	PLCC	FLASH	108	3.5	19C/1DB	PinSite	32 PIN PLCC MB
28F001BX-T	32	TSOP	FLASH		3.8	19C/BAB	PinSite	PPI-0702
28F004BX-B	40	TSOP	FLASH		3.9	400/403	PinSite	PPI-0701
28F004BX-T	40	TSOP	FLASH		3.9	400/402	PinSite	PPI-0701
28F008	44	SO	FLASH		3.9	208/808	PinSite	SOIC_53



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation (continued)</b>								
28F008-R	40	TSOP	FLASH		3.8	208/211	PinSite	PPI-0701
28F008-S	40	TSOP	FLASH		3.8	208/210	PinSite	PPI-0701
28F008SA-L	40	TSOP	FLASH		3.9	208/210	PinSite	PPI-0701
28F008SA-L	40	TSOP	FLASH		3.9	208/211	PinSite	PPI-0701
28F008SA-L	44	SOP	FLASH		3.9	208/808	PinSite	SOIC_53
28F010	32	DIP	FLASH		3.2	186/118	Site 40/48	
28F010	32	PLCC	FLASH		3.2	186/12A	ChipSite	
28F010	32	PLCC	FLASH		3.2	186/12A	PinSite	32 PIN PLCC MB
28F010	32	TSOP	FLASH		3.8	186/B18	PinSite	PPI-0702
28F010-P1	32	DIP	FLASH		3.8	186/118	Site 40/48	
28F010-P1	32	PLCC	FLASH		3.8	186/12A	ChipSite	
28F010-P1	32	PLCC	FLASH		3.8	186/12A	PinSite	32 PIN PLCC MB
28F010-R	32	TSOP	FLASH		3.8	186/C18	PinSite	PPI-0702
28F020	32	DIP	FLASH		3.8	186/170	Site 40/48	
28F020	32	PLCC	FLASH		3.8	186/177	ChipSite	
28F020	32	PLCC	FLASH		3.8	186/177	PinSite	32 PIN PLCC MB
28F020	32	TSOP	FLASH		3.8	186/D18	PinSite	PPI-0702
28F020-R	32	TSOP	FLASH		3.8	186/E18	PinSite	PPI-0702
28F256-P1	32	DIP	FLASH		2.2	113/10A	Site 40/48	
28F256-P1	32	PLCC	FLASH		2.6	113/112	ChipSite	
28F256-P1	32	PLCC	FLASH		3.0	113/112	PinSite	32 PIN PLCC MB
28F256-P2	32	DIP	FLASH		2.2	0A8/10A	Site 40/48	
28F256-P2	32	PLCC	FLASH		2.4	0A8/112	ChipSite	
28F256-P2	32	PLCC	FLASH		3.0	0A8/112	PinSite	32 PIN PLCC MB
28F256A	32	DIP	FLASH		3.8	186/10A	Site 40/48	
28F256A	32	PLCC	FLASH		3.8	186/112	ChipSite	
28F256A	32	PLCC	FLASH		3.8	186/112	PinSite	32 PIN PLCC MB
28F400BX-B	44	SOP	FLASH		3.9	404/407	PinSite	SOIC_53
28F400BX-T	44	SOP	FLASH		3.9	404/406	PinSite	SOIC_53
28F512	32	DIP	FLASH		3.8	186/117	Site 40/48	
28F512	32	PLCC	FLASH		3.8	186/129	ChipSite	
28F512	32	PLCC	FLASH		3.8	186/129	PinSite	32 PIN PLCC MB
5AC312	24	DIP	EPLD	49	2.2	55/3F	Site 40/48	
5AC312	28	PLCC	EPLD	49	2.8	055/73F	ChipSite	
5AC312	28	PLCC	EPLD	49	3.0	055/73F	PinSite	28 PIN PLCC MB
5AC324	40	DIP	EPLD	34	3.8	17C/0BA	Site 48	
5AC324	44	PLCC	EPLD		3.4	17C/7BA	PinSite	44 PIN PLCC MB
5C031	20	DIP	EPLD	129	3.9	55/50	Site 40/48	
5C032	20	DIP	EPLD		1.2	55/95	Site 40/48	
5C060	24	DIP	EPLD	37	2.7	55/59	Site 40/48	
5C060	28	PLCC	EPLD	37	2.7	055/759	ChipSite	
5C060	28	PLCC	EPLD	37	3.0	055/759	PinSite	28 PIN PLCC MB
5C090	40	DIP	EPLD		2.7	55/96	Site 40/48	
5C090	44	PLCC	EPLD		2.7	055/796	ChipSite	
5C090	44	PLCC	EPLD		3.0	055/796	PinSite	44 PIN PLCC MB
5C121	40	DIP	EPLD		1.0	55/97	Site 40/48	
5C180	68	JLCC	EPLD		3.3	55/9A	ChipSite	
5C180	68	JLCC	EPLD		3.3	55/9A	PinSite	68 PIN PLCC MB
5C180	68	PGA	EPLD		3.4	055/99A	PinSite	
5C180	68	PLCC	EPLD		2.7	55/9A	ChipSite	
5C180	68	PLCC	EPLD		3.0	55/9A	PinSite	68 PIN PLCC MB
68C257	28	DIP	EPROM		2.7	5C/E2	Site 40/48	
68C257	28	DIP	EPROM		2.8	5C/E2	SetSite	
68C257	32	PLCC	EPROM		2.8	5C/E3	ChipSite	
68C257	32	PLCC	EPROM		3.0	5C/E3	PinSite	32 PIN PLCC MB
68C257M	28	DIP	EPROM		2.7	5C/E2	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation (continued)</b>								
68C257M	28	DIP	EPROM		2.8	5C/E2	SetSite	
85C060	24	DIP	MPLD		3.8	67/59	Site 40/48	
85C060	28	PLCC	MPLD		3.8	067/759	ChipSite	
85C060	28	PLCC	MPLD		3.8	067/759	PinSite	28 PIN PLCC MB
85C090	40	DIP	MPLD		3.2	67/96	Site 40/48	
85C090	44	PLCC	MPLD		3.2	067/796	ChipSite	
85C090	44	PLCC	MPLD		3.2	067/796	PinSite	44 PIN PLCC MB
85C220	20	DIP	EPLD		2.8	55/95	Site 40/48	
85C220	20	PLCC	EPLD		3.0	055/795	ChipSite	
85C220	20	PLCC	EPLD		3.0	055/795	PinSite	20 PIN PLCC MB
85C224	24	DIP	MPLD		3.1	179/0DC	Site 40/48	
85C224	28	PLCC	MPLD		3.1	179/7DC	ChipSite	
85C224	28	PLCC	MPLD		3.1	179/7DC	PinSite	28 PIN PLCC MB
85C22V10	24	DIP	EPLD	151	3.7	2DB/227	Site 40/48	
85C22V10	28	PLCC	EPLD	151	3.7	2DB/527	ChipSite	
85C22V10	28	PLCC	EPLD	151	3.7	2DB/527	PinSite	28 PIN PLCC MB
85C508	28	DIP	MPLD		3.4	55/B0	Site 40/48	
85C960	28	DIP	MPLD		3.4	55/F4	Site 40/48	
85C960	28	PLCC	MPLD		3.4	055/7F4	ChipSite	
85C960	28	PLCC	MPLD		3.4	055/7F4	PinSite	28 PIN PLCC MB
8741	40	DIP	MICRO		3.1	56/59	Site 40/48	
8741A	40	DIP	MICRO		3.1	56/59	Site 40/48	
8741AH	40	DIP	MICRO	2	1.5	51/1B	Site 40/48	
8742AH	40	DIP	MICRO	18,50	2.1	51/3F	Site 40/48	
8742AH	44	PLCC	MICRO	18,50	2.1	051/73F	ChipSite	
8742AH	44	PLCC	MICRO	18,50	3.0	051/73F	PinSite	44 PIN PLCC MB
8744H	40	DIP	MICRO		2.1	D5/58	Site 40/48	
8748	40	DIP	MICRO		1.5	52/56	Site 40/48	
8748H	40	DIP	MICRO		1.6	50/56	Site 40/48	
8749H	40	DIP	MICRO		1.6	50/57	Site 40/48	
8751	40	DIP	MICRO		1.6	53/58	Site 40/48	
8751BH	40	DIP	MICRO	2	2.6	05A/11C	Site 40/48	
8751BH	44	PLCC	MICRO	2	2.7	05A/126	ChipSite	
8751BH	44	PLCC	MICRO	2	3.0	05A/126	PinSite	44 PIN PLCC MB
8751H	40	DIP	MICRO	2	1.0	D5/58	Site 40/48	
8751H	44	LCC	MICRO	2	3.0	D5/D4	PinSite	44 PIN LCC MB
8751H	44	LCC	MICRO	2,44	1.4	D5/D4	ChipSite	
8752BH	40	DIP	MICRO	2	2.1	5A/0C	Site 40/48	
8752BH	44	PLCC	MICRO	2	2.1	05A/70C	ChipSite	
8752BH	44	PLCC	MICRO	2	3.0	05A/70C	PinSite	44 PIN PLCC MB
8755A	40	DIP	MICRO		1.5	47/55	Site 40/48	
8795BH	48	DIP	MICRO	24	3.4	0D8/101	Site 48	
8796BH	68	LCC	MICRO	24	3.4	D8/D5	PinSite	68 PIN LCC MB
8796BH	68	LCC	MICRO	24,44	3.4	D8/D5	ChipSite	
8797BH	68	LCC	MICRO	24	3.8	D8/D5	PinSite	68 PIN LCC MB
8797BH	68	LCC	MICRO	24,44	3.8	D8/D5	ChipSite	
8797BH	68	PGA	MICRO	24	3.8	0D8/15D	PinSite	
8797JF	68	PLCC	MICRO	24	3.2	182/18A	ChipSite	
8797JF	68	PLCC	MICRO	24	3.2	182/18A	PinSite	68 PIN PLCC MB
8798	48	DIP	MICRO	24	3.4	0D8/101	Site 48	
87C196JQ	52	JLCC	MICRO	120	3.4	197/1A8	PinSite	52 PIN PLCC MB
87C196JQ	52	PLCC	MICRO	120	3.4	197/1A8	PinSite	52 PIN PLCC MB
87C196JR	52	JLCC	MICRO	120	3.4	197/1A6	PinSite	52 PIN PLCC MB
87C196JR	52	PLCC	MICRO	120	3.4	197/1A6	PinSite	52 PIN PLCC MB
87C196KB	68	LCC	MICRO	30	3.7	130/1D5	PinSite	68 PIN LCC MB
87C196KB	68	LCC	MICRO	30,44	3.7	130/1D5	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation (continued)</b>								
87C196KB	68	PLCC	MICRO	30	3.7	130/1D5	ChipSite	
87C196KB	68	PLCC	MICRO	30	3.7	130/1D5	PinSite	68 PIN PLCC MB
87C196KB16	68	PLCC	MICRO	30	3.6	1DA/1D5	PinSite	68 PIN PLCC MB
87C196KB16	80	QFP	MICRO	30	3.9	130/AD5	PinSite	PPI-0507
87C196KC	68	JLCC	MICRO	52	3.4	166/16C	ChipSite	
87C196KC	68	JLCC	MICRO	52	3.4	166/16C	PinSite	68 PIN PLCC MB
87C196KC	68	PGA	MICRO	52	3.4	166/1B1	PinSite	
87C196KC	80	QFP	MICRO	52	3.8	166/A6C	PinSite	PPI-0507
87C196KC	80	SQFP	MICRO	52	3.9	166/D6D	PinSite	PPI-0516
87C196KD	68	JLCC	MICRO	52	3.8	166/202	ChipSite	
87C196KD	68	JLCC	MICRO	52	3.8	166/202	PinSite	68 PIN PLCC MB
87C196KD	80	QFP	MICRO	52	3.8	166/A6D	PinSite	PPI-0507
87C196KD	80	SQFP	MICRO	52	3.9	166/D6C	PinSite	PPI_0516
87C196KQ	68	JLCC	MICRO	120	3.4	197/1A7	PinSite	68 PIN PLCC MB
87C196KQ	68	PLCC	MICRO	120	3.4	197/1A7	PinSite	68 PIN PLCC MB
87C196KR	68	JLCC	MICRO	120	3.4	197/1A5	PinSite	68 PIN PLCC MB
87C196KR	68	PLCC	MICRO	120	3.4	197/1A5	PinSite	68 PIN PLCC MB
87C196MC	68	PLCC	MICRO	120	3.5	1C3/1D9	PinSite	68 PIN PLCC MB
87C198	52	PLCC	MICRO	30	3.7	130/1DA	PinSite	52 PIN PLCC MB
87C198	80	QFP	MICRO	30	3.9	130/ADA	PinSite	PPI-0507
87C257	28	DIP	EPROM		2.7	5C/E2	SetSite	
87C257	28	DIP	EPROM		2.7	5C/E2	Site 40/48	
87C257	32	PLCC	EPROM		2.7	5C/E3	ChipSite	
87C257	32	PLCC	EPROM		3.0	5C/E3	PinSite	32 PIN PLCC MB
87C257I	28	DIP	EPROM		2.7	5C/E2	Site 40/48	
87C257I	28	DIP	EPROM		2.8	5C/E2	SetSite	
87C42	40	DIP	MICRO	50,142	3.7	207/20F	Site 40/48	
87C42	44	PLCC	MICRO	50,142	3.7	207/212	ChipSite	
87C42	44	PLCC	MICRO	50,142	3.7	207/212	PinSite	44 PIN PLCC MB
87C42	44	QFP	MICRO	50,142	3.9	207/A13	PinSite	PPI-0508
87C452	68	PGA	MICRO	17	2.1	10A/033	Site 40/48	
87C51	40	DIP	MICRO	2	1.4	5A/0B	Site 40/48	
87C51	44	PLCC	MICRO	2	1.5	05A/70B	ChipSite	
87C51	44	PLCC	MICRO	2	3.0	05A/70B	PinSite	44 PIN PLCC MB
87C51(FX)	40	DIP	MICRO	121	3.5	156/1CA	Site 40/48	
87C51(FX)	44	PLCC	MICRO	121	3.5	156/1CB	ChipSite	
87C51(FX)	44	PLCC	MICRO	121	3.5	156/1CB	PinSite	44 PIN PLCC MB
87C51(FX)	44	QFP	MICRO	121	3.8	156/ACB	PinSite	PPI-0508
87C51FA	40	DIP	MICRO	2	1.4	5A/4F	Site 40/48	
87C51FA	44	PLCC	MICRO	2	2.8	05A/143	ChipSite	
87C51FA	44	PLCC	MICRO	2	3.0	05A/143	PinSite	44 PIN PLCC MB
87C51FA(FX)	40	DIP	MICRO	121	3.5	156/1CC	Site 40/48	
87C51FA(FX)	44	PLCC	MICRO	121	3.5	156/1CD	ChipSite	
87C51FA(FX)	44	PLCC	MICRO	121	3.5	156/1CD	PinSite	44 PIN PLCC MB
87C51FA(FX)	44	QFP	MICRO	121	3.8	156/ACD	PinSite	PPI-0508
87C51FB	40	DIP	MICRO	2	2.6	5A/73	Site 40/48	
87C51FB	44	PLCC	MICRO	2	2.8	05A/144	ChipSite	
87C51FB	44	PLCC	MICRO	2	3.0	05A/144	PinSite	44 PIN PLCC MB
87C51FB	44	QFP	MICRO	121	3.8	156/AD4	PinSite	PPI-0508
87C51FB(FX)	40	DIP	MICRO	121	3.5	156/1D3	Site 40/48	
87C51FB(FX)	44	PLCC	MICRO	121	3.5	156/1D4	ChipSite	
87C51FB(FX)	44	PLCC	MICRO	121	3.5	156/1D4	PinSite	44 PIN PLCC MB
87C51FC	40	DIP	MICRO	51	3.0	156/15E	Site 40/48	
87C51FC	44	PLCC	MICRO	51	3.2	156/15F	PinSite	44 PIN PLCC MB
87C51FC	44	QFP	MICRO	51	3.8	156/A5F	PinSite	PPI-0508
87C51GB	68	JLCC	PE	107	3.3	192/1A3	PinSite	68 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation (continued)</b>								
87C54	40	DIP	MICRO	51	3.5	156/199	Site 40/48	
87C54	44	PLCC	MICRO	51	3.5	156/19A	PinSite	44 PIN PLCC MB
87C54	44	QFP	MICRO	51	3.8	156/A9A	PinSite	PPI-0508
87C58	40	DIP	MICRO	51	3.8	156/15E	Site 40/48	
87C58	44	LCC	MICRO	51	3.8	156/15F	PinSite	44 PIN LCC MB
87C58	44	PLCC	MICRO	51	3.8	156/15F	PinSite	44 PIN PLCC MB
87C58	44	QFP	MICRO	51	3.8	156/A5F	PinSite	PPI-0508
87C64	28	DIP	EPROM		2.1	93/3A	SetSite	
87C64	28	DIP	EPROM		2.1	93/3A	Site 40/48	
87C64	32	PLCC	EPROM		2.3	5C/C7	ChipSite	
87C64	32	PLCC	EPROM		3.0	5C/C7	PinSite	32 PIN PLCC MB
87C75PF	40	DIP	PE	26	2.4	112/107	Site 40/48	
87C75PF	44	PLCC	PE	26	2.6	112/108	ChipSite	
87C75PF	44	PLCC	PE	26	3.0	112/108	PinSite	44 PIN PLCC MB
IPLD22V10	24	DIP	EPLD		3.8	2DB/229	Site 40/48	
IPLD22V10	28	PLCC	EPLD		3.8	2DB/529	ChipSite	
IPLD22V10	28	PLCC	EPLD		3.8	2DB/529	PinSite	28 PIN PLCC MB
IPLD610	24	DIP	EPLD		3.8	67/59	Site 40/48	
IPLD610	28	PLCC	EPLD		3.8	067/759	ChipSite	
IPLD610	28	PLCC	EPLD		3.8	067/759	PinSite	28 PIN PLCC MB
IPLD910	40	DIP	EPLD		3.8	67/96	Site 40/48	
IPLD910	44	PLCC	EPLD		3.8	067/796	ChipSite	
IPLD910	44	PLCC	EPLD		3.8	067/796	PinSite	44 PIN PLCC MB
P27128A	28	DIP	EPROM		2.0	5C/51	SetSite	
P27128A	28	DIP	EPROM		2.0	5C/51	Site 40/48	
P27256	28	DIP	EPROM		2.0	5C/32	SetSite	
P27256	28	DIP	EPROM		2.0	5C/32	Site 40/48	
P2732A	24	DIP	EPROM		2.0	4D/24	SetSite	
P2732A	24	DIP	EPROM		2.0	4D/24	Site 40/48	
P27512	28	DIP	EPROM		2.2	5E/A4	SetSite	
P27512	28	DIP	EPROM		2.2	5E/A4	Site 40/48	
P2764	28	DIP	EPROM		2.0	79/33	SetSite	
P2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
P2764A	28	DIP	EPROM		2.0	5C/33	SetSite	
P2764A	28	DIP	EPROM		2.0	5C/33	Site 40/48	
P8741AH	40	DIP	MICRO	2	1.5	51/1B	Site 40/48	
P8742AH	40	DIP	MICRO	18	2.1	51/3F	Site 40/48	
P8748H	40	DIP	MICRO		1.6	50/56	Site 40/48	
P8749H	40	DIP	MICRO		1.6	50/57	Site 40/48	

**International CMOS Technology, Inc.**

153	20	DIP	PEEL	33	2.2	8D/65	Site 40/48	
173	24	DIP	PEEL	33	2.2	8D/76	Site 40/48	
18CV8	20	DIP	PEEL		1.4	8D/3A	Site 40/48	
18CV8	20	PLCC	PEEL		2.5	08D/73A	ChipSite	
18CV8	20	PLCC	PEEL		3.0	08D/73A	PinSite	20 PIN PLCC MB
20CG10	24	DIP	PEEL	33	2.6	8D/56	Site 40/48	
22CV10	24	DIP	PEEL	33	2.6	8D/28	Site 40/48	
22CV10	28	PLCC	PEEL	33	2.6	08D/728	ChipSite	
22CV10	28	PLCC	PEEL	33	3.0	08D/728	PinSite	28 PIN PLCC MB
22CV10A	24	DIP	PEEL	33	3.6	A6/28	Site 40/48	
22CV10A	28	PLCC	PEEL	33	3.6	0A6/728	ChipSite	
22CV10A	28	PLCC	PEEL	33	3.6	0A6/728	PinSite	28 PIN PLCC MB
22CV10A+	24	DIP	PEEL		3.6	A6/A3	Site 40/48	
22CV10A+	28	PLCC	PEEL		3.6	0A6/7A3	ChipSite	
22CV10A+	28	PLCC	PEEL		3.6	0A6/7A3	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
International CMOS Technology, Inc. (continued)								
22CV10Z	24	DIP	PEEL		2.6	8D/A3	Site 40/48	28 PIN PLCC MB
22CV10Z	28	PLCC	PEEL		2.7	08D/7A3	ChipSite	
22CV10Z	28	PLCC	PEEL		3.0	08D/7A3	PinSite	
253	20	DIP	PEEL		2.2	8D/85	Site 40/48	
273	24	DIP	PEEL		2.2	8D/86	Site 40/48	
27CX010	32	DIP	EPROM		3.0	5C/CB	Site 40/48	
27CX256	28	DIP	EPROM		3.5	5C/32	Site 40/48	
27CX321	24	DIP	EPROM	31	3.6	382/063	Site 40/48	28 PIN PLCC MB
27CX322	24	DIP	EPROM	31	3.6	382/063	Site 40/48	
27CX641	24	DIP	EPROM	31	3.6	82/67	Site 40/48	
27CX642	24	DIP	EPROM	31	3.6	82/67	Site 40/48	
7024	24	DIP	PEELARY		3.3	141/027	Site 40/48	
7024	28	PLCC	PEELARY		3.3	141/727	ChipSite	
7024	28	PLCC	PEELARY		3.3	141/727	PinSite	
93C46	8	DIP	EEPROM		2.8	118/10E	Site 40/48	
93C46A	8	DIP	EEPROM		3.4	173/10E	Site 40/48	
93C56A	8	DIP	EEPROM		3.4	175/179	Site 40/48	
93C66A	8	DIP	EEPROM		3.4	175/17A	Site 40/48	
93CX56	8	DIP	EEPROM		3.5	1C0/079	Site 40/48	
93CX66	8	DIP	EEPROM		3.5	1C0/07A	Site 40/48	
Lattice Semiconductor								
16V8	20	DIP	GAL	49	3.7	36/55	Site 40/48	20 PIN PLCC MB
16V8	20	PLCC	GAL	49	3.6	036/755	ChipSite	
16V8	20	PLCC	GAL	49	3.7	036/755	PinSite	
16V8A	20	DIP	GAL	49	3.7	36/55	Site 40/48	
16V8A	20	LCC	GAL	49	3.6	036/755	ChipSite	
16V8A	20	LCC	GAL	49	3.6	036/755	PinSite	20 PIN LCC MB
16V8A	20	PLCC	GAL	49	3.6	036/755	ChipSite	20 PIN PLCC MB
16V8A	20	PLCC	GAL	49	3.7	036/755	PinSite	
16V8B	20	DIP	GAL	49	3.7	36/55	Site 40/48	
16V8B	20	PLCC	GAL	49	3.6	036/755	ChipSite	20 PIN PLCC MB
16V8B	20	PLCC	GAL	49	3.7	036/755	PinSite	
16VP8B	20	DIP	GAL	49	3.8	226/254	Site 48	
16Z8	24	DIP	GAL	28	3.7	36/47	Site 40/48	20 PIN PLCC MB
18V10	20	DIP	GAL	49,28	3.9	36/5F	Site 40/48	
18V10	20	PLCC	GAL	49,28	3.9	036/75F	ChipSite	
18V10	20	PLCC	GAL	49,28	3.9	036/75F	PinSite	20 PIN PLCC MB
20RA10	24	DIP	GAL	49	3.9	36/45	Site 40/48	28 PIN LCC MB
20RA10	28	LCC	GAL	49	3.9	036/745	ChipSite	
20RA10	28	LCC	GAL	49	3.9	036/745	PinSite	
20RA10	28	PLCC	GAL	49	3.9	036/745	ChipSite	28 PIN PLCC MB
20RA10	28	PLCC	GAL	49	3.9	036/745	PinSite	
20RA10B	24	DIP	GAL	49	3.9	036/8A5	Site 40/48	
20RA10B	28	LCC	GAL	49	3.9	036/6A5	ChipSite	28 PIN LCC MB
20RA10B	28	LCC	GAL	49	3.9	036/6A5	PinSite	
20RA10B	28	PLCC	GAL	49	3.9	036/6A5	ChipSite	
20RA10B	28	PLCC	GAL	49	3.9	036/6A5	PinSite	28 PIN PLCC MB
20RA10BUES	24	DIP	GAL	49	3.9	036/5A5	Site 40/48	28 PIN LCC MB
20RA10BUES	28	LCC	GAL	49	3.9	036/9A5	ChipSite	
20RA10BUES	28	LCC	GAL	49	3.9	036/9A5	PinSite	
20RA10BUES	28	PLCC	GAL	49	3.9	036/9A5	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor (continued)</b>								
20RA10BUES	28	PLCC	GAL	49	3.9	036/9A5	PinSite	28 PIN PLCC MB
20RA10UES	24	DIP	GAL		3.9	36/A5	Site 40/48	
20RA10UES	28	LCC	GAL	49	3.9	036/7A5	ChipSite	
20RA10UES	28	LCC	GAL	49	3.9	036/7A5	PinSite	28 PIN LCC MB
20RA10UES	28	PLCC	GAL		3.9	036/7A5	ChipSite	
20RA10UES	28	PLCC	GAL		3.9	036/7A5	PinSite	28 PIN PLCC MB
20V8	24	DIP	GAL	49	3.7	36/57	Site 40/48	
20V8	28	PLCC	GAL	49	3.6	036/757	ChipSite	
20V8	28	PLCC	GAL	49	3.7	036/757	PinSite	28 PIN PLCC MB
20V8A	24	DIP	GAL	49	3.7	36/57	Site 40/48	
20V8A	28	LCC	GAL	49	3.6	036/757	ChipSite	
20V8A	28	LCC	GAL	49	3.6	036/757	PinSite	28 PIN LCC MB
20V8A	28	PLCC	GAL	49	3.6	036/757	ChipSite	
20V8A	28	PLCC	GAL	49	3.7	036/757	PinSite	28 PIN PLCC MB
20V8B	24	DIP	GAL	49	3.7	36/57	Site 40/48	
20V8B	28	PLCC	GAL	49	3.6	036/757	ChipSite	
20V8B	28	PLCC	GAL	49	3.6	036/757	PinSite	28 PIN PLCC MB
20VP8B	24	DIP	GAL		3.8	227/255	Site 40/48	
20XV10	24	DIP	GAL		3.6	36/E3	Site 40/48	
20XV10	28	PLCC	GAL		3.6	036/7E3	ChipSite	
20XV10	28	PLCC	GAL		3.6	036/7E3	PinSite	28 PIN PLCC MB
22V10	24	DIP	GAL	32,49	3.7	36/28	Site 40/48	
22V10	28	LCC	GAL	32,49	3.9	036/728	ChipSite	
22V10	28	LCC	GAL	32,49	3.9	036/728	PinSite	28 PIN LCC MB
22V10	28	PLCC	GAL	32,49	3.7	036/728	ChipSite	
22V10	28	PLCC	GAL	32,49	3.7	036/728	PinSite	28 PIN PLCC MB
22V10B	24	DIP	GAL	32,49	3.7	36/28	Site 40/48	
22V10B	28	LCC	GAL	32,49	3.9	036/728	ChipSite	
22V10B	28	LCC	GAL	32,49	3.9	036/728	PinSite	28 PIN LCC MB
22V10B	28	PLCC	GAL	32,49	3.7	036/728	ChipSite	
22V10B	28	PLCC	GAL	32,49	3.7	036/728	PinSite	28 PIN PLCC MB
22V10BUES	24	DIP	GAL	32,49	3.7	36/7F	Site 40/48	
22V10BUES	28	LCC	GAL	32,49	3.9	036/77F	ChipSite	
22V10BUES	28	LCC	GAL	32,49	3.9	036/77F	PinSite	28 PIN LCC MB
22V10BUES	28	PLCC	GAL	32,49	3.7	036/77F	ChipSite	
22V10BUES	28	PLCC	GAL	32,49	3.7	036/77F	PinSite	28 PIN PLCC MB
22V10UES	24	DIP	GAL	32,49	3.7	36/7F	Site 40/48	
22V10UES	28	LCC	GAL	32,49	3.9	036/77F	ChipSite	
22V10UES	28	LCC	GAL	32,49	3.9	036/77F	PinSite	28 PIN LCC MB
22V10UES	28	PLCC	GAL	32,49	3.7	036/77F	ChipSite	
22V10UES	28	PLCC	GAL	32,49	3.7	036/77F	PinSite	28 PIN PLCC MB
26CV12	28	DIP	GAL	49	3.7	36/4E	Site 48	
26CV12	28	LCC	GAL	49	3.9	036/74E	PinSite	28 PIN LCC MB
26CV12	28	PLCC	GAL	49	3.7	036/74E	PinSite	28 PIN PLCC MB
26CV12B	28	DIP	GAL	49	3.9	36/4E	Site 48	
26CV12B	28	LCC	GAL	49	3.9	036/74E	PinSite	28 PIN LCC MB
26CV12B	28	PLCC	GAL	49	3.9	036/74E	PinSite	28 PIN PLCC MB
6001	24	DIP	GAL	49	3.9	36/4A	Site 40/48	
6001	28	PLCC	GAL	49	3.9	036/74A	PinSite	28 PIN PLCC MB
6001B	24	DIP	GAL	49	3.9	36/4A	Site 40/48	
6001B	28	PLCC	GAL	49	3.9	036/74A	PinSite	28 PIN PLCC MB
6002B	24	DIP	GAL		3.9	228/256	Site 40/48	
6002B	28	PLCC	GAL		3.9	228/756	PinSite	28 PIN PLCC MB
ispLSI1016	44	PLCC	ISPGAL	58	3.8	229/257	Site 40/48	
ispLSI1016	44	PLCC	ISPGAL		3.8	229/757	PinSite	44 PIN PLCC MB
ispLSI1024	68	PLCC	ISPGAL	97	3.8	22B/258	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor (continued)</b>								
ispLSI1024	68	PLCC	ISPGAL		3.8	22B/758	PinSite	68 PIN PLCC MB
ispLSI1032	84	PLCC	ISPGAL	136	3.8	1E1/0FB	Site 40/48	
ispLSI1032	84	PLCC	ISPGAL		3.8	1E1/7FB	PinSite	84 PIN PLCC MB
ispLSI1048	120	QFP	ISPGAL	101	3.8	22E/259	Site 40/48	
pLSI1016	44	PLCC	PLSI	58	3.8	22A/257	Site 40/48	
pLSI1016	44	PLCC	PLSI		3.8	22A/757	PinSite	44 PIN PLCC MB
pLSI1024	68	PLCC	PLSI	97	3.8	22C/258	Site 40/48	
pLSI1024	68	PLCC	PLSI		3.8	22C/758	PinSite	68 PIN PLCC MB
pLSI1032	84	PLCC	PLSI	136	3.8	1E0/0FB	Site 40/48	
pLSI1032	84	PLCC	PLSI		3.8	1E0/7FB	PinSite	84 PIN PLCC MB
pLSI1048	120	QFP	PLSI	101	3.8	22F/259	Site 40/48	
<b>Macronix Inc.</b>								
27C256	28	DIP	EPROM		3.8	5C/32	SetSite	
27C256	28	DIP	EPROM		3.8	5C/32	Site 40/48	
<b>Microchip Technology Inc.</b>								
16C54	18	DIP	MICRO	34,43	3.3	145/140	Site 48	
16C54	18	SO	MICRO	43	3.3	145/840	PinSite	SOIC_30
16C55	28	DIP	MICRO	34,43	3.3	145/149	Site 48	
16C56	18	DIP	MICRO	34,43	3.3	145/14A	Site 48	
16C57	28	DIP	MICRO	34,43	3.3	145/14B	Site 48	
24C01/A	8	DIP	EEPROM		3.3	F20/18F	Site 40/48	
24C01/A/-SN	8	SO	EEPROM		3.9	F20/88F	PinSite	SOIC_15
24C02/A	8	DIP	EEPROM		3.3	F20/119	Site 40/48	
24C02/A-SN	8	SO	EEPROM		3.9	F20/81B	PinSite	SOIC_15
24C04/A	8	DIP	EEPROM		2.8	120/11A	Site 40/48	
24C04/A-SN	8	SO	EEPROM		3.9	120/81A	PinSite	SOIC_15
24LC16	8	DIP	EEPROM		3.7	201/11B	Site 40/48	
24LC16	14	SO	EEPROM		3.9	201/81C	PinSite	SOIC_15
27256	28	DIP	EPROM		2.2	5C/32	SetSite	
27256	28	DIP	EPROM		2.2	5C/32	Site 40/48	
27C128	28	DIP	EPROM		3.0	115/051	SetSite	
27C128	28	DIP	EPROM		3.0	115/051	Site 40/48	
27C128	28	SO	EPROM		3.1	115/852	ChipSite	
27C128	28	SO	EPROM		3.1	115/852	PinSite	SOIC_30
27C128	32	LCC	EPROM	44	3.1	115/0C2	ChipSite	
27C128	32	LCC	EPROM		3.1	115/0C2	PinSite	32 PIN LCC MB
27C128	32	PLCC	EPROM		3.0	115/0C2	ChipSite	
27C128	32	PLCC	EPROM		3.0	115/0C2	PinSite	32 PIN PLCC MB
27C256	28	DIP	EPROM		3.0	115/032	SetSite	
27C256	28	DIP	EPROM		3.0	115/032	Site 40/48	
27C256	28	SO	EPROM		3.1	115/832	ChipSite	
27C256	28	SO	EPROM		3.1	115/832	PinSite	SOIC_30
27C256	32	LCC	EPROM	44	3.1	115/0C3	ChipSite	
27C256	32	LCC	EPROM		3.1	115/0C3	PinSite	32 PIN LCC MB
27C256	32	PLCC	EPROM		3.0	115/0C3	ChipSite	
27C256	32	PLCC	EPROM		3.0	115/0C3	PinSite	32 PIN PLCC MB
27C512	28	DIP	EPROM		3.0	116/0A4	SetSite	
27C512	28	DIP	EPROM		3.0	116/0A4	Site 40/48	
27C512	28	SO	EPROM		3.2	116/8A4	ChipSite	
27C512	28	SO	EPROM		3.2	116/8A4	PinSite	SOIC_30



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Microchip Technology Inc. (continued)</b>								
27C512	32	LCC	EPROM	44	3.0	116/0C4	ChipSite	32 PIN LCC MB
27C512	32	LCC	EPROM		3.0	116/0C4	PinSite	
27C512	32	PLCC	EPROM		3.1	116/0C4	ChipSite	32 PIN PLCC MB
27C512	32	PLCC	EPROM		3.1	116/0C4	PinSite	
27C64	28	DIP	EPROM		3.0	115/033	SetSite	Site 40/48
27C64	28	DIP	EPROM		3.0	115/033	Site 40/48	
27C64	28	SO	EPROM		3.1	115/833	ChipSite	SOIC_30
27C64	28	SO	EPROM		3.1	115/833	PinSite	
27C64	32	LCC	EPROM	44	3.1	115/0C1	ChipSite	32 PIN LCC MB
27C64	32	LCC	EPROM		3.1	115/0C1	PinSite	
27C64	32	PLCC	EPROM		3.0	115/0C1	ChipSite	32 PIN PLCC MB
27C64	32	PLCC	EPROM		3.0	115/0C1	PinSite	
27HC1616	40	DIP	EPROM		3.3	191/1A2	Site 40/48	Site 40/48
27HC191	24	DIP	EPROM		2.2	110/021	Site 40/48	
27HC256	28	DIP	EPROM		3.0	115/032	SetSite	Site 40/48
27HC256	28	DIP	EPROM		3.0	115/032	Site 40/48	
27HC291	24	DIP	EPROM		2.2	110/021	Site 40/48	SetSite
27HC291	24	DIP	EPROM		3.6	110/021	SetSite	
27HC64	28	DIP	EPROM		3.0	115/033	Site 40/48	Site 40/48
27HC641	24	DIP	EPROM		2.6	13A/067	Site 40/48	
28C04/A	24	DIP	EEPROM		2.5	C4/82	Site 40/48	32 PIN PLCC MB
28C04/A	32	PLCC	EEPROM		3.2	0C4/18E	ChipSite	
28C04/A	32	PLCC	EEPROM		3.2	0C4/18E	PinSite	Site 40/48
28C16/A	24	DIP	EEPROM		2.1	C4/96	Site 40/48	
28C16/A	24	DIP	EEPROM		2.8	C4/96	SetSite	ChipSite
28C16/A	32	PLCC	EEPROM		2.3	0C4/796	ChipSite	
28C16/A	32	PLCC	EEPROM		3.0	0C4/796	PinSite	32 PIN PLCC MB
28C17/A	28	DIP	EEPROM		2.5	C4/A2	Site 40/48	
28C17/A	28	SO	EEPROM		3.4	C4/A2	ChipSite	SOIC_30
28C17/A	28	SO	EEPROM		3.4	C4/A2	PinSite	
28C17/A	32	PLCC	EEPROM		3.2	0C4/796	ChipSite	32 PIN PLCC MB
28C17/A	32	PLCC	EEPROM		3.2	0C4/796	PinSite	
28C256	28	DIP	EEPROM	36	3.1	BA/99	Site 40/48	Site 40/48
28C64/A	28	DIP	EEPROM		2.3	C4/98	Site 40/48	
28C64/A	28	DIP	EEPROM		2.8	C4/98	SetSite	ChipSite
28C64/A	28	SO	EEPROM		3.4	C4/98	ChipSite	
28C64/A	28	SO	EEPROM		3.4	C4/98	PinSite	SOIC_30
28C64/A	32	LCC	EEPROM	44	3.2	C4/5D	ChipSite	
28C64/A	32	LCC	EEPROM		3.2	C4/5D	PinSite	32 PIN LCC MB
28C64/A	32	PLCC	EEPROM		2.3	C4/5D	ChipSite	
28C64/A	32	PLCC	EEPROM		3.0	C4/5D	PinSite	32 PIN PLCC MB
5911	8	DIP	EEPROM		3.6	123/11D	Site 40/48	Site 40/48
59C11	8	DIP	EEPROM		3.2	123/11D	Site 40/48	
59C11-SN	8	SO	EEPROM		3.9	123/81D	PinSite	SOIC_15
8582	8	DIP	EEPROM		3.6	F21/120	Site 40/48	
85C72	8	DIP	EEPROM		3.3	F20/18F	Site 40/48	Site 40/48
85C82	8	DIP	EEPROM		3.3	F20/119	Site 40/48	
85C92	8	DIP	EEPROM		3.6	F20/1E6	Site 40/48	Site 40/48
93C06	8	DIP	EEPROM		3.2	118/178	Site 40/48	
93C46	8	DIP	EEPROM		3.2	118/10E	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Mikroelektronik</b>								
2716	24	DIP	EPROM		3.4	19/23	Site 40/48	
2732	24	DIP	EPROM		3.4	19/24	Site 40/48	
<b>Mitsubishi Electronics of America</b>								
2708	24	DIP	EPROM		2.0	21/27	SetSite	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
27128	28	DIP	EPROM		2.0	79/51	SetSite	
27128	28	DIP	EPROM		2.0	79/51	Site 40/48	
2716	24	DIP	EPROM		2.2	19/23	SetSite	
2716	24	DIP	EPROM		2.2	19/23	Site 40/48	
27256	28	DIP	EPROM		2.1	93/32	SetSite	
27256	28	DIP	EPROM		2.1	93/32	Site 40/48	
2732	24	DIP	EPROM		3.8	19/24	SetSite	
2732	24	DIP	EPROM		3.8	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
27401A	32	DIP	EPROM		3.8	168/0F6	Site 40/48	
27512	28	DIP	EPROM		2.0	4B/A4	SetSite	
27512	28	DIP	EPROM		2.0	4B/A4	Site 40/48	
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
27C100	32	DIP	EPROM		2.8	8F/CC	SetSite	
27C100	32	DIP	EPROM		2.8	8F/CC	Site 40/48	
27C100	32	JLCC	EPROM		2.8	08F/127	ChipSite	
27C100	32	JLCC	EPROM		3.0	08F/127	PinSite	32 PIN PLCC MB
27C100	32	PLCC	EPROM		2.8	08F/127	ChipSite	
27C100	32	PLCC	EPROM		3.0	08F/127	PinSite	32 PIN PLCC MB
27C101	32	DIP	EPROM		2.8	8F/CB	SetSite	
27C101	32	DIP	EPROM		2.8	8F/CB	Site 40/48	
27C101	32	PLCC	EPROM		2.8	8F/DE	ChipSite	
27C101	32	PLCC	EPROM		3.0	8F/DE	PinSite	32 PIN PLCC MB
27C102	40	DIP	EPROM		2.8	8E/A8	SetSite	
27C102	40	DIP	EPROM		2.8	8E/A8	Site 40/48	
27C102	44	JLCC	EPROM		3.3	8E/88	ChipSite	
27C102	44	JLCC	EPROM		3.3	8E/88	PinSite	44 PIN PLCC MB
27C102	44	PLCC	EPROM		2.8	8E/88	ChipSite	
27C102	44	PLCC	EPROM		3.0	8E/88	PinSite	44 PIN PLCC MB
27C128	28	DIP	EPROM		2.0	79/51	SetSite	
27C128	28	DIP	EPROM		2.0	79/51	Site 40/48	
27C201	32	DIP	EPROM		2.8	8F/F5	SetSite	
27C201	32	DIP	EPROM		2.8	8F/F5	Site 40/48	
27C201	32	JLCC	EPROM		3.3	08F/12D	ChipSite	
27C201	32	JLCC	EPROM		3.3	08F/12D	PinSite	32 PIN PLCC MB
27C202	40	DIP	EPROM		2.8	8E/DF	SetSite	
27C202	40	DIP	EPROM		2.8	8E/DF	Site 40/48	
27C202	44	JLCC	EPROM		3.6	08E/173	ChipSite	
27C202	44	JLCC	EPROM		3.6	08E/173	PinSite	44 PIN PLCC MB
27C256	28	DIP	EPROM		2.1	93/32	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C256A	28	DIP	EPROM		2.8	93/32	SetSite	
27C256A	28	DIP	EPROM		2.8	93/32	Site 40/48	
27C401	32	DIP	EPROM		3.1	168/0F6	Site 40/48	
27C401	32	DIP	EPROM		3.8	168/0F6	SetSite	
27C402	40	DIP	EPROM		3.1	5F/89	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Mitsubishi Electronics of America (continued)</b>								
27C402	40	DIP	EPROM		3.6	5F/89	SetSite	
27C512A	28	DIP	EPROM		2.4	4B/A4	Site 40/48	
27C512A	28	DIP	EPROM		2.8	4B/A4	SetSite	
28C64A	28	DIP	EEPROM		3.5	1B1/098	Site 40/48	
28F101	32	DIP	FLASH		3.8	186/118	Site 40/48	
28F101	32	PLCC	FLASH		3.9	186/12A	ChipSite	
28F101	32	PLCC	FLASH		3.9	186/12A	PinSite	32 PIN PLCC MB
28F102	40	DIP	FLASH		3.8	20A/0A8	Site 40/48	
3128-M6	60	CARD	RAM	92	3.4	1B0/1C4	Site 40/48	
3128-M7	50	CARD	RAM	93	3.4	1B0/1C4	Site 40/48	
31M0-M6	60	CARD	RAM	92	3.4	1B0/1C4	Site 40/48	
31M0-M7	50	CARD	RAM	93	3.4	1B0/1C4	Site 40/48	
3256-M6	60	CARD	RAM	92	3.4	1B0/1C4	Site 40/48	
3256-M7	50	CARD	RAM	93	3.4	1B0/1C4	Site 40/48	
32M0-M6	60	CARD	SRAM	92	3.4	1B0/1C4	Site 40/48	
32M0-M7	50	CARD	SRAM	93	3.4	1B0/1C4	Site 40/48	
3512-M6	60	CARD	RAM	92	3.4	1B0/1C4	Site 40/48	
3512-M7	50	CARD	RAM	93	3.4	1B0/1C4	Site 40/48	
37410E6FP	80	QFP	MICRO	71	3.2	79/51	Site 40/48	
37450E4	64	SDIP	MICRO	110	3.6	79/33	Site 40/48	
37450E4	80	QFP	MICRO	111	3.6	79/33	Site 40/48	
37450E8	64	SDIP	MICRO	75	3.2	93/32	Site 40/48	
37450E8	80	QFP	MICRO	74	3.2	93/32	Site 40/48	
37470E8	32	SDIP	MICRO	72	3.2	93/32	Site 40/48	
37471E8	42	SDIP	MICRO	72	3.2	93/32	Site 40/48	
37471E8	56	QFP	MICRO	73	3.2	93/32	Site 40/48	
37700E2	80	LCC	MICRO	65	3.2	93/32	Site 40/48	
37700E4	80	LCC	MICRO	66	3.2	93/32	Site 40/48	
37701E2	64	SDIP	MICRO	112	3.4	93/32	Site 40/48	
37701E4	64	SDIP	MICRO	113	3.4	93/32	Site 40/48	
37702E2	80	LCC	MICRO	65	3.8	93/32	Site 40/48	
37702E4	80	LCC	MICRO	66	3.8	93/32	Site 40/48	
37796E4	84	PLCC	MICRO	76	3.2	93/32	Site 40/48	
4128-F3	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
4128-F4	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
41M0-F1	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
41M0-F2	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
41M1-F1	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
41M1-F2	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
4256-F3	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
4256-F4	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
4257-F3	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
4257-F4	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
42M0-F1	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
42M0-F2	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
42M1-F1	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
42M1-F2	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
4512-F3	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
4512-F4	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
4513-F3	60	CARD	EPROM	92	3.4	19E/0CB	Site 40/48	
4513-F4	50	CARD	EPROM	93	3.4	19E/0CB	Site 40/48	
50727E	42	SDIP	MICRO	77,109	3.6	79/33	Site 40/48	
50727E	42	SO	MICRO	77,109	3.6	79/33	Site 40/48	
50746E	64	SDIP	MICRO	67	3.6	79/33	Site 40/48	
50746E	72	QFP	MICRO	68	3.6	79/33	Site 40/48	
50747E	64	SDIP	MICRO	69	3.6	79/33	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Mitsubishi Electronics of America (continued)</b>								
50747E	72	QFP	MICRO	70	3.6	79/33	Site 40/48	
50927E	30	SDIP	MICRO	78,109	3.2	79/33	Site 40/48	
50927E	36	SO	MICRO	78,109	3.6	79/33	Site 40/48	
54700A	16	DIP	PROM		2.0	B5/01	Site 40/48	
54701A	16	DIP	PROM		2.0	B5/01	Site 40/48	
54730A	16	DIP	PROM		2.0	B5/02	Site 40/48	
54731A	16	DIP	PROM		2.0	B5/02	Site 40/48	
54740A	18	DIP	PROM		2.0	B5/05	Site 40/48	
54741A	18	DIP	PROM		2.0	B5/05	Site 40/48	
808A-F1	32	CARD	EEPROM	92	3.4	1AB/1C0	Site 40/48	
8128-F1	60	CARD	EEPROM	92	3.4	1AB/1C4	Site 40/48	
816A-F1	32	CARD	EEPROM	92	3.4	1AB/1C1	Site 40/48	
8192-F1	60	CARD	EEPROM	92,114	3.4	1AB/1C4	Site 40/48	
81M1-G1	68	CARD	FLASH	156	3.8	21C/118	Site 40/48	
832A-F1	32	CARD	EEPROM	92	3.4	1AB/1C2	Site 40/48	
8513-G1	68	CARD	FLASH	156	3.8	21C/118	Site 40/48	
864A-F1	32	CARD	EEPROM	92	3.4	1AB/1C3	Site 40/48	
<b>Mitsubishi Plastics</b>								
0016EEBOC20	32	CARD	EEPROM	90	3.2	B7/23	Site 40/48	
0016EEBSC20	32	CARD	EPROM	90	3.3	B7/23	Site 40/48	
0064EEBHN30	32	CARD	EEPROM	87	3.2	D7/98	Site 40/48	
0064EEPHC25	32	CARD	EEPROM	87	3.3	CA/A6	Site 40/48	
0064EP10N15	32	CARD	PROM	87	3.2	5C/33	Site 40/48	
0128EEBH030	32	CARD	EEPROM	87	3.2	D7/98	Site 40/48	
0128EEPHD25	32	CARD	EEPROM	87	3.2	CA/A6	Site 40/48	
0256EEPHC21	32	CARD	EEPROM	102	3.3	BA/99	Site 40/48	
0256EP1FC20	32	CARD	PROM	87	3.2	93/32	Site 40/48	
0512EEPHD21	32	CARD	PROM	102	3.3	BA/99	Site 40/48	
0512EP1FC22	32	CARD	PROM	88	3.2	4B/A4	Site 40/48	
1024EP1HC25	32	CARD	PROM	89	3.2	8F/CB	Site 40/48	
<b>Motorola Inc.</b>								
10139	16	DIP	PROM	19	1.2	B0/D6	Site 40/48	
10149AL10	16	DIP	PROM		2.7	137/0D7	Site 40/48	
10149L10	16	DIP	PROM	19,34	2.7	C6/D7	Site 40/48	
10149L25	16	DIP	PROM	19,34	3.2	B6/D7	Site 40/48	
2532	24	DIP	EPROM		2.0	19/25	SetSite	
2532	24	DIP	EPROM		2.0	19/25	Site 40/48	
2708	24	DIP	EPROM		2.0	21/27	SetSite	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
2716	24	DIP	EPROM		2.0	19/23	SetSite	
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
2816	24	DIP	EEPROM		2.0	43/23	SetSite	
2816	24	DIP	EEPROM		2.0	43/23	Site 40/48	
68701	40	DIP	MICRO	7,21	1.1	FD/FD	Site 40/48	
68701U4	40	DIP	MICRO	7,21	1.2	FD/FE	Site 40/48	
68705P3	28	DIP	MICRO	8,21	2.4	FB/FB	Site 40/48	
68705P5	28	DIP	MICRO	8,21,25	2.4	1E/FB	Site 40/48	
68705R3	40	DIP	MICRO	8,21	2.4	FC/FC	Site 40/48	
68705R5	40	DIP	MICRO	6,8,21	2.4	E0/FC	Site 40/48	
68705S3	28	DIP	MICRO	6,8,21	3.5	102/102	Site 40/48	
68705S3-A20T	28	DIP	MICRO	6,8,21	3.7	1C4/102	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Motorola Inc. (continued)</b>								
68705U3	40	DIP	MICRO	8,21	2.4	FC/FC	Site 40/48	
68705U5	40	DIP	MICRO	6,8,21	2.4	E0/FC	Site 40/48	
68708	24	DIP	EPROM		2.0	21/27	Site 40/48	
68764	24	DIP	EPROM		1.7	25/29	Site 40/48	
68764	24	DIP	EPROM		2.0	25/29	SetSite	
68766	24	DIP	EPROM		1.7	25/29	Site 40/48	
68766	24	DIP	EPROM		2.0	25/29	SetSite	
68HC11A1	48	DIP	MICRO	140,173,178	3.4	101/100	Site 48	
68HC11A1-FN	52	PLCC	MICRO	140,173,178	2.0	101/700	ChipSite	52 PIN PLCC MB
68HC11A1-FN	52	PLCC	MICRO	140,173,178	3.0	101/700	PinSite	
68HC11A8-FN	52	PLCC	MICRO	10,140,173,178	2.0	101/700	ChipSite	
68HC11A8-FN	52	PLCC	MICRO	10,140,173,178	3.0	101/700	PinSite	52 PIN PLCC MB
68HC11F1-FN	68	PLCC	MICRO	130,172,173,174	3.9	237/267	PinSite	68 PIN PLCC MB
68HC11K4	84	PLCC	MICRO	130,171,173,178	3.9	236/266	PinSite	84 PIN PLCC MB
68HC705B5	52	PLCC	MICRO	35	3.5	178/184	PinSite	52 PIN PLCC MB
68HC705C8	40	DIP	MICRO	2,21,35	2.6	134/0F8	Site 40/48	
68HC705C8-FN	44	PLCC	MICRO	2,21,35	2.6	134/7F8	ChipSite	44 PIN PLCC MB
68HC705C8-FN	44	PLCC	MICRO	2,21,35	3.0	134/7F8	PinSite	
68HC705C9	40	DIP	MICRO	140	3.7	204/206	Site 40/48	
68HC705C9	44	PLCC	MICRO	21,140	3.7	204/204	ChipSite	44 PIN PLCC MB
68HC705C9	44	PLCC	MICRO	21,140	3.7	204/204	PinSite	
68HC705D9	40	DIP	MICRO	140	3.7	204/207	Site 40/48	
68HC705D9	44	PLCC	MICRO	21,140	3.7	204/205	ChipSite	44 PIN PLCC MB
68HC705D9	44	PLCC	MICRO	21,140	3.7	204/205	PinSite	
68HC705E1	28	DIP	MICRO	21,130,140,176	3.9	239/268	Site 48	
68HC705J2	20	DIP	MICRO	21,140,143	3.6	1CE/1E0	Site 40/48	
68HC705P9	28	DIP	MICRO	21,139,140	3.7	201/1FA	Site 40/48	SOIC_30
68HC705P9	28	SO	MICRO	139,140	3.7	201/1FB	ChipSite	
68HC705P9	28	SO	MICRO	139,140	3.7	201/1FB	PinSite	
68HC705P9	28	DIP	MICRO	21,139,140	3.7	1FA/1FA	Site 40/48	
68HC705P9	28	SO	MICRO	139,140	3.7	1FA/1FB	ChipSite	
68HC705P9	28	SO	MICRO	139,140	3.7	1FA/1FB	PinSite	SOIC_30
68HC711D3	40	DIP	MICRO		3.5	1C2/1D8	Site 40/48	44 PIN PLCC MB
68HC711D3	44	PLCC	MICRO		3.5	1C2/1DC	PinSite	
68HC711E9	52	PLCC	MICRO	21,131,132	3.6	1D9/1E3	ChipSite	
68HC711E9	52	PLCC	MICRO	21,131,132	3.6	1D9/1E3	PinSite	52 PIN PLCC MB
68HC711K4	84	JLCC	MICRO	21,131,173,175,178	3.9	221/24B	PinSite	84 PIN PLCC MB
68HC805B6-FN	52	PLCC	MICRO	35	3.1	177/183	PinSite	52 PIN PLCC MB
68HC805C4	40	DIP	MICRO	35	2.6	133/0F7	Site 40/48	
68HC805C4-FN	44	PLCC	MICRO	35	2.6	133/7F7	ChipSite	44 PIN PLCC MB
68HC805C4-FN	44	PLCC	MICRO	35	3.0	133/7F7	PinSite	
68HC811A2	48	DIP	MICRO	11,34	2.2	100/100	Site 48	
68HC811A2-FN	52	PLCC	MICRO	11	2.0	100/700	ChipSite	52 PIN PLCC MB
68HC811A2-FN	52	PLCC	MICRO	11	3.0	100/700	PinSite	
68HC811E2	48	DIP	MICRO	11	3.6	138/1F0	Site 48	
68HC811E2-FN	52	PLCC	MICRO	11	2.7	138/138	ChipSite	
68HC811E2-FN	52	PLCC	MICRO	11	3.0	138/138	PinSite	52 PIN PLCC MB
76161	24	DIP	PROM		2.2	05/21	Site 40/48	
7620	16	DIP	PROM		2.2	05/03	Site 40/48	
7621	16	DIP	PROM		2.2	05/03	Site 40/48	
7640	24	DIP	PROM		2.2	05/15	Site 40/48	
7641	24	DIP	PROM		2.2	05/15	Site 40/48	
7642	18	DIP	PROM		2.2	05/05	Site 40/48	
7643	18	DIP	PROM		2.2	05/05	Site 40/48	
7680	24	DIP	PROM		2.2	05/16	Site 40/48	
7681	24	DIP	PROM		2.2	05/16	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Motorola Inc. (continued)</b>								
7684	18	DIP	PROM		2.2	05/06	Site 40/48	
7685	18	DIP	PROM		2.2	05/06	Site 40/48	
TMS2716	24	DIP	EPROM		2.5	23/28	SetSite	
TMS2716	24	DIP	EPROM		2.5	23/28	Site 40/48	
<b>NEC Electronics Corp.</b>								
27128	28	DIP	EPROM		2.0	79/51	SetSite	
27128	28	DIP	EPROM		2.0	79/51	Site 40/48	
2716	24	DIP	EPROM		3.2	19/23	SetSite	
2716	24	DIP	EPROM		3.2	19/23	Site 40/48	
27256	28	DIP	EPROM		2.0	45/32	SetSite	
27256	28	DIP	EPROM		2.0	45/32	Site 40/48	
27256A	28	DIP	EPROM		2.4	48/32	SetSite	
27256A	28	DIP	EPROM		2.4	48/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
27512	28	DIP	EPROM		2.0	4B/A4	Site 40/48	
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
27C1000	32	DIP	EPROM		2.3	71/CC	SetSite	
27C1000	32	DIP	EPROM		2.3	71/CC	Site 40/48	
27C1000A	32	DIP	EPROM		2.6	71/CC	SetSite	
27C1000A	32	DIP	EPROM		2.6	71/CC	Site 40/48	
27C1001	32	DIP	EPROM		2.2	71/CB	SetSite	
27C1001	32	DIP	EPROM		2.2	71/CB	Site 40/48	
27C1001A	32	DIP	EPROM		2.6	71/CB	SetSite	
27C1001A	32	DIP	EPROM		2.6	71/CB	Site 40/48	
27C1024	40	DIP	EPROM		2.4	6F/A8	SetSite	
27C1024	40	DIP	EPROM		2.4	6F/A8	Site 40/48	
27C1024A	40	DIP	EPROM		2.6	6F/A8	Site 40/48	
27C2001	32	DIP	EPROM		2.3	71/F5	SetSite	
27C2001	32	DIP	EPROM		2.3	71/F5	Site 40/48	
27C256	28	DIP	EPROM		2.0	45/32	SetSite	
27C256	28	DIP	EPROM		2.0	45/32	Site 40/48	
27C256	28	LCC	EPROM	44	2.1	045/732	ChipSite	28 PIN LCC MB
27C256	28	LCC	EPROM		3.0	045/732	PinSite	
27C256A	28	DIP	EPROM		3.1	71/32	SetSite	
27C256A	28	DIP	EPROM		3.1	71/32	Site 40/48	
27C256A	32	LCC	EPROM	44	2.3	071/732	ChipSite	
27C256A	32	LCC	EPROM		3.0	071/732	PinSite	32 PIN LCC MB
27C4000	40	DIP	EPROM		3.4	06F/172	Site 40/48	
27C4001	32	DIP	EPROM		2.4	71/F6	Site 40/48	
27C4001	32	DIP	EPROM		3.6	71/F6	SetSite	
27C4096	40	DIP	EPROM		3.0	6F/89	Site 40/48	
27C512	28	DIP	EPROM		2.4	4E/A4	SetSite	
27C512	28	DIP	EPROM		2.4	4E/A4	Site 40/48	
27C64	28	DIP	EPROM		2.0	79/33	Site 40/48	
27C64	28	DIP	EPROM		2.8	79/33	SetSite	
27C8000	42	DIP	EPROM		3.9	223/1A9	Site 48	
27C8001	32	DIP	EPROM		3.4	1A5/1BA	Site 40/48	
27HC65	24	DIP	EPROM		2.8	154/067	Site 40/48	
28C256	28	DIP	EEPROM	36	2.8	BA/99	Site 40/48	
28C64	28	DIP	EEPROM		2.5	CA/98	SetSite	
28C64	28	DIP	EEPROM		2.5	CA/98	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family / Pinout Code	Module	MatchBook/ Adapter
<b>NEC Electronics Corp. (continued)</b>								
28C64A	28	DIP	EEPROM		3.8	CA/98	Site 40/48	
75P008	42	SDIP	MICRO		3.9	20E/21F	PinSite	PPI-0602
75P008	44	QFP	MICRO		3.9	20E/231	PinSite	PPI-0505
75P036	64	QFP	MICRO		3.9	20E/21E	PinSite	PPI-0503
75P108	64	QFP	MICRO		3.9	20B/214	PinSite	PPI-0501
75P108	64	SDIP	MICRO		3.9	20B/213	PinSite	PPI-0601
75P108B	64	QFP	MICRO		3.9	20C/234	PinSite	PPI-0501
75P108B	64	SDIP	MICRO		3.9	20C/215	PinSite	PPI-0601
75P116	64	QFP	MICRO		3.9	20C/24E	PinSite	PPI-0501
75P116	64	SDIP	MICRO		3.9	20C/216	PinSite	PPI-0601
75P216A	64	SDIP	MICRO		3.9	20C/217	PinSite	PPI-0601
75P218	64	QFP	MICRO		3.9	20C/235	PinSite	PPI-0501
75P218	64	SDIP	MICRO		3.9	20C/219	PinSite	PPI-0601
75P238	94	QFP	MICRO		3.9	20E/236	PinSite	PPI-0506
75P308	80	LCC	MICRO		3.9	20E/237	PinSite	PPI-0201
75P308	80	QFP	MICRO		3.8	20E/238	PinSite	PPI-0502
75P316	80	QFP	MICRO		3.8	20E/220	PinSite	PPI-0502
75P316A	64	QFP	MICRO		3.9	20E/220	PinSite	PPI-0502
75P328	80	QFP	MICRO		3.9	20E/239	PinSite	PPI-0504
75P402	28	DIP	MICRO		3.8	093/1FE	Site 40/48	
75P402CT	28	SDIP	MICRO		3.9	093/221	PinSite	PPI-0603
75P516	80	LCC	MICRO		3.9	20E/23B	PinSite	PPI-0201
75P516	80	QFP	MICRO		3.9	20E/23A	PinSite	PPI-0502
75P518	80	LCC	MICRO		3.9	20E/23C	PinSite	PPI-0201
75P518	80	QFP	MICRO		3.9	20E/251	PinSite	PPI-0502
75P54	20	SDIP	MICRO		3.9	20D/21D	PinSite	PPI-0603
75P56	24	SDIP	MICRO		3.9	20D/230	PinSite	PPI-0603
75P56	24	SO	MICRO		3.9	20D/81A	PinSite	PPI-0301
75P64	20	SDIP	MICRO		3.9	20D/21C	PinSite	PPI-0603
75P64	20	SO	MICRO		3.9	20D/81C	PinSite	PPI-0301
75P64	24	SDIP	MICRO		3.9	20D/21B	PinSite	PPI-0603
75P66	24	SO	MICRO		3.9	20D/81B	PinSite	PPI-0301
77P20	28	DIP	MICRO	23	2.3	F77/F20	Site 40/48	
77P230	68	PGA	MICRO		3.1	161/16B	PinSite	
77P25	28	DIP	MICRO	27	2.4	126/F21	Site 40/48	
77P25	44	PLCC	MICRO	27	3.3	126/1AC	PinSite	44 PIN PLCC MB
77P56	20	DIP	MICRO	34	2.8	14B/146	Site 48	
78CP14	64	QFP	MICRO	100	3.6	93/32	Site 40/48	
78CP14	64	SDIP	MICRO	84	3.2	93/32	Site 40/48	
78CP14	68	PLCC	MICRO		3.4	19D/1BB	ChipSite	
78CP14	68	PLCC	MICRO		3.4	19D/1BB	PinSite	68 PIN PLCC MB
78P214	64	QFP	MICRO	115,116	3.6	93/32	Site 40/48	
78P214	64	SDIP	MICRO	85,116	3.6	93/32	Site 40/48	
78P214	68	PLCC	MICRO	102,116,137	3.6	93/32	Site 40/48	
78P214	68	PLCC	MICRO		3.6	19D/1AD	PinSite	68 PIN PLCC MB
78P224	84	PLCC	MICRO		3.4	19D/1B5	PinSite	84 PIN PLCC MB
78P312A	64	QFP	MICRO	165	3.8	93/32	Site 40/48	
78P312A	68	PLCC	MICRO	167	3.8	93/32	Site 40/48	
78P312A	68	PLCC	MICRO		3.3	19D/1AE	PinSite	68 PIN PLCC MB
78P312ACW	64	SDIP	MICRO	164	3.8	93/32	Site 40/48	
78P312AGQ	64	QUIP	MICRO	166	3.8	93/32	Site 40/48	
78P322	68	LCC	MICRO	9	3.8	93/32	Site 40/48	
78P322	68	PLCC	MICRO	34	3.8	93/32	Site 40/48	
78P322	74	LCC	MICRO	5	3.8	93/32	Site 40/48	
78P322	74	QFP	MICRO	169	3.8	93/32	Site 40/48	
78P322	80	QFP	MICRO	168	3.8	93/32	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>NEC Electronics Corp. (continued)</b>								
78P324	68	LCC	MICRO	160	3.8	71/CB	Site 40/48	
78P324	68	PLCC	MICRO	159	3.8	71/CB	Site 40/48	
78P324	74	LCC	MICRO	157	3.8	71/CB	Site 40/48	
78P324	74	QFP	MICRO	158	3.8	71/CB	Site 40/48	
78P328	64	QFP	MICRO	123	3.8	93/32	Site 40/48	
78P328	64	SDIP	MICRO	124	3.8	93/32	Site 40/48	
78P334	84	LCC	MICRO	161	3.8	71/CB	Site 40/48	
78P334	84	PLCC	MICRO	163	3.8	71/CB	Site 40/48	
78P334	94	QFP	MICRO	162	3.8	71/CB	Site 40/48	
8741A	40	DIP	MICRO		3.5	56/59	Site 40/48	
8748	40	DIP	MICRO		1.5	52/56	Site 40/48	
8748H	40	DIP	MICRO		1.6	50/56	Site 40/48	
8749H	40	DIP	MICRO		1.6	50/57	Site 40/48	
B400	16	DIP	PROM		2.1	72/02	Site 40/48	
B401	20	DIP	PROM		2.1	72/08	Site 40/48	
B402	16	DIP	PROM		2.1	72/03	Site 40/48	
B403	16	DIP	PROM		2.1	72/01	Site 40/48	
B404	20	DIP	PROM		2.1	72/09	Site 40/48	
B405	24	DIP	PROM		2.1	72/15	Site 40/48	
B406	18	DIP	PROM		2.1	72/05	Site 40/48	
B407	18	DIP	PROM		2.1	72/06	Site 40/48	
B408	24	DIP	PROM		2.1	72/16	Site 40/48	
B409	24	DIP	PROM		2.1	72/21	Site 40/48	
B410	16	DIP	PROM		2.1	72/02	Site 40/48	
B412	16	DIP	PROM		2.1	72/03	Site 40/48	
B417	24	DIP	PROM		2.1	72/16	Site 40/48	
B419	24	DIP	PROM		2.1	72/42	Site 40/48	
B421	20	DIP	PROM		2.1	72/08	Site 40/48	
B423	16	DIP	PROM		2.1	72/01	Site 40/48	
B424	20	DIP	PROM		2.1	72/09	Site 40/48	
B425	24	DIP	PROM		2.1	72/15	Site 40/48	
B426	18	DIP	PROM		2.1	72/05	Site 40/48	
B427	18	DIP	PROM		2.1	72/06	Site 40/48	
B428	24	DIP	PROM		2.1	72/16	Site 40/48	
B429	24	DIP	PROM		2.4	72/21	Site 40/48	
B431	20	DIP	PROM		2.4	68/53	Site 40/48	
<b>National Semiconductor Corp.</b>								
10016C4	28	PLCC	PAL	119	3.0	95/AD	ChipSite	28 PIN PLCC MB
10016C4	28	PLCC	PAL	119	3.0	95/AD	PinSite	
10016LC4	24	DIP	PAL		2.7	95/92	Site 40/48	
10016LC8	24	DIP	PAL		2.7	95/92	Site 40/48	
10016LD4	24	DIP	PAL		2.7	95/92	Site 40/48	
10016LD8	24	DIP	PAL		2.7	95/92	Site 40/48	
10016LM4	24	DIP	PAL		2.7	95/92	Site 40/48	
10016P4	24	DIP	PAL	19,20	2.7	95/A0	Site 40/48	
10016P8	24	DIP	PAL	19	2.7	95/92	Site 40/48	
10016P8	28	PLCC	PAL	119	3.5	095/792	ChipSite	
10016P8	28	PLCC	PAL	119	3.5	095/792	PinSite	28 PIN PLCC MB
10016PE8	28	PLCC	PAL	119	3.4	95/C2	ChipSite	28 PIN PLCC MB
10016PE8	28	PLCC	PAL	119	3.4	95/C2	PinSite	
10016RC4	24	DIP	PAL		2.7	95/92	Site 40/48	
10016RC8	24	DIP	PAL		2.7	95/92	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
10016RD4	24	DIP	PAL		2.7	95/92	Site 40/48	
10016RD8	24	DIP	PAL	19	2.7	95/92	Site 40/48	
10016RM4	24	DIP	PAL		2.7	95/92	Site 40/48	
1016C4	28	PLCC	PAL	119	3.0	95/AD	ChipSite	
1016C4	28	PLCC	PAL	119	3.0	95/AD	PinSite	28 PIN PLCC MB
1016LC4	24	DIP	PAL		2.7	95/92	Site 40/48	
1016LC8	24	DIP	PAL		2.7	95/92	Site 40/48	
1016LD4	24	DIP	PAL		2.7	95/92	Site 40/48	
1016LD8	24	DIP	PAL		2.7	95/92	Site 40/48	
1016LM4	24	DIP	PAL		2.7	95/92	Site 40/48	
1016P4	24	DIP	PAL	19,20	2.7	95/A0	Site 40/48	
1016P8	24	DIP	PAL	19	2.7	95/92	Site 40/48	
1016P8	28	PLCC	PAL	119	3.5	095/792	ChipSite	
1016P8	28	PLCC	PAL	119	3.5	095/792	PinSite	28 PIN PLCC MB
1016PE8	28	PLCC	PAL	119	3.4	95/C2	ChipSite	
1016PE8	28	PLCC	PAL	119	3.4	95/C2	PinSite	28 PIN PLCC MB
1016RC4	24	DIP	PAL		2.7	95/92	Site 40/48	
1016RC8	24	DIP	PAL		2.7	95/92	Site 40/48	
1016RD4	24	DIP	PAL		2.7	95/92	Site 40/48	
1016RD8	24	DIP	PAL	19	2.7	95/92	Site 40/48	
1016RM4	24	DIP	PAL		2.7	95/92	Site 40/48	
10E149	16	DIP	PROM		2.6	12A/0D7	Site 40/48	
10H8/A/A2	20	DIP	PAL		3.0	95/18	Site 40/48	
10H8/A2	20	PLCC	PAL		3.0	095/718	ChipSite	
10H8/A2	20	PLCC	PAL		3.0	095/718	PinSite	20 PIN PLCC MB
10L8/A/A2	20	DIP	PAL		3.0	95/13	Site 40/48	
10L8/A2	20	PLCC	PAL		3.0	095/713	ChipSite	
10L8/A2	20	PLCC	PAL		3.0	095/713	PinSite	20 PIN PLCC MB
12H6/A/A2	20	DIP	PAL		3.0	95/19	Site 40/48	
12H6/A2	20	PLCC	PAL		3.0	095/719	ChipSite	
12H6/A2	20	PLCC	PAL		3.0	095/719	PinSite	20 PIN PLCC MB
12L10/A	24	DIP	PAL		3.0	95/01	Site 40/48	
12L6/A/A2	20	DIP	PAL		3.0	95/14	Site 40/48	
12L6/A2	20	PLCC	PAL		3.0	095/714	ChipSite	
12L6/A2	20	PLCC	PAL		3.0	095/714	PinSite	20 PIN PLCC MB
14H4/A/A2	20	DIP	PAL		3.0	95/20	Site 40/48	
14H4/A2	20	PLCC	PAL		3.0	095/720	ChipSite	
14H4/A2	20	PLCC	PAL		3.0	095/720	PinSite	20 PIN PLCC MB
14L4/A/A2	20	DIP	PAL		3.0	95/15	Site 40/48	
14L4/A2	20	PLCC	PAL		3.0	095/715	ChipSite	
14L4/A2	20	PLCC	PAL		3.0	095/715	PinSite	20 PIN PLCC MB
14L8/A	24	DIP	PAL		3.0	95/02	Site 40/48	
16C1/A/A2	20	DIP	PAL		3.0	95/21	Site 40/48	
16C1/A2	20	PLCC	PAL		3.0	095/721	ChipSite	
16C1/A2	20	PLCC	PAL		3.0	095/721	PinSite	20 PIN PLCC MB
16H2/A/A2	20	DIP	PAL		3.0	95/22	Site 40/48	
16H2/A2	20	PLCC	PAL		3.0	095/722	ChipSite	
16H2/A2	20	PLCC	PAL		3.0	095/722	PinSite	20 PIN PLCC MB
16L2/A/A2	20	DIP	PAL		3.0	95/16	Site 40/48	
16L2/A2	20	PLCC	PAL		3.0	095/716	ChipSite	
16L2/A2	20	PLCC	PAL		3.0	095/716	PinSite	20 PIN PLCC MB
16L6/A	24	DIP	PAL		3.0	95/03	Site 40/48	
16L8-7	20	DIP	PAL		3.4	07/17	Site 40/48	
16L8-7	20	PLCC	PAL		3.1	007/717	ChipSite	
16L8-7	20	PLCC	PAL		3.1	007/717	PinSite	20 PIN PLCC MB
16L8/A/A2	20	DIP	PAL		3.0	95/17	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
16L8/A/A2	20	PLCC	PAL		3.0	095/717	ChipSite	
16L8/A/A2	20	PLCC	PAL		3.0	095/717	PinSite	20 PIN PLCC MB
16L8B	20	PLCC	PAL		2.4	095/717	ChipSite	
16L8B	20	PLCC	PAL		3.0	095/717	PinSite	20 PIN PLCC MB
16L8B/B2	20	DIP	PAL		3.0	95/17	Site 40/48	
16L8D	20	DIP	PAL		2.6	07/17	Site 40/48	
16L8D	20	PLCC	PAL		2.8	007/717	ChipSite	
16L8D	20	PLCC	PAL		3.0	007/717	PinSite	20 PIN PLCC MB
16R4-7	20	DIP	PAL		3.4	07/24	Site 40/48	
16R4-7	20	PLCC	PAL		3.4	007/724	ChipSite	
16R4-7	20	PLCC	PAL		3.4	007/724	PinSite	20 PIN PLCC MB
16R4/A/A2	20	DIP	PAL		3.0	95/24	Site 40/48	
16R4/A/A2	20	PLCC	PAL		3.0	095/724	ChipSite	
16R4/A/A2	20	PLCC	PAL		3.0	095/724	PinSite	20 PIN PLCC MB
16R4B	20	PLCC	PAL		3.0	095/724	ChipSite	
16R4B	20	PLCC	PAL		3.0	095/724	PinSite	20 PIN PLCC MB
16R4B/B2	20	DIP	PAL		3.0	95/24	Site 40/48	
16R4D	20	DIP	PAL		2.6	07/24	Site 40/48	
16R4D	20	PLCC	PAL		3.2	007/724	ChipSite	
16R4D	20	PLCC	PAL		3.2	007/724	PinSite	20 PIN PLCC MB
16R6-7	20	DIP	PAL		3.4	07/24	Site 40/48	
16R6-7	20	PLCC	PAL		3.4	007/724	ChipSite	
16R6-7	20	PLCC	PAL		3.4	007/724	PinSite	20 PIN PLCC MB
16R6/A/A2	20	DIP	PAL		3.0	95/24	Site 40/48	
16R6/A/A2	20	PLCC	PAL		3.0	095/724	ChipSite	
16R6/A/A2	20	PLCC	PAL		3.0	095/724	PinSite	20 PIN PLCC MB
16R6B	20	PLCC	PAL		3.0	095/724	ChipSite	
16R6B	20	PLCC	PAL		3.0	095/724	PinSite	20 PIN PLCC MB
16R6B/B2	20	DIP	PAL		3.0	95/24	Site 40/48	
16R6D	20	DIP	PAL		2.6	07/24	Site 40/48	
16R6D	20	PLCC	PAL		3.2	007/724	ChipSite	
16R6D	20	PLCC	PAL		3.2	007/724	PinSite	20 PIN PLCC MB
16R8-7	20	DIP	PAL		3.4	07/24	Site 40/48	
16R8-7	20	PLCC	PAL		3.4	007/724	ChipSite	
16R8-7	20	PLCC	PAL		3.4	007/724	PinSite	20 PIN PLCC MB
16R8/A/A2	20	DIP	PAL		3.0	95/24	Site 40/48	
16R8/A/A2	20	PLCC	PAL		3.0	095/724	ChipSite	
16R8/A/A2	20	PLCC	PAL		3.0	095/724	PinSite	20 PIN PLCC MB
16R8B	20	PLCC	PAL		3.0	095/724	ChipSite	
16R8B	20	PLCC	PAL		3.0	095/724	PinSite	20 PIN PLCC MB
16R8B/B2	20	DIP	PAL		3.0	95/24	Site 40/48	
16R8D	20	DIP	PAL		2.6	07/24	Site 40/48	
16R8D	20	PLCC	PAL		3.2	007/724	ChipSite	
16R8D	20	PLCC	PAL		3.2	007/724	PinSite	20 PIN PLCC MB
16RA8	20	DIP	PAL		3.6	22/31	Site 40/48	
16RA8	20	PLCC	PAL		3.6	022/731	ChipSite	
16RA8	20	PLCC	PAL		3.6	022/731	PinSite	20 PIN PLCC MB
16V8	20	DIP	GAL	22,49	3.6	0D/55	Site 40/48	
16V8	20	PLCC	GAL	22,49	3.6	00D/755	ChipSite	
16V8	20	PLCC	GAL	22,49	3.6	00D/755	PinSite	20 PIN PLCC MB
16V8-10	20	DIP	GAL	22,49	3.6	0D/55	Site 40/48	
16V8-10	20	PLCC	GAL	22,49	3.6	00D/755	ChipSite	
16V8-10	20	PLCC	GAL	22,49	3.6	00D/755	PinSite	20 PIN PLCC MB
16V8-7	20	DIP	GAL	22,49	3.6	0D/55	Site 40/48	
16V8-7	20	PLCC	GAL	22,49	3.6	00D/755	ChipSite	
16V8-7	20	PLCC	GAL	22,49	3.6	00D/755	PinSite	20 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
16V8/A/QS	20	DIP	GAL	22,49	3.6	0D/55	Site 40/48	20 PIN PLCC MB
16V8/A/QS	20	PLCC	GAL	22,49	3.6	00D/755	ChipSite	
16V8/A/QS	20	PLCC	GAL	22,49	3.6	00D/755	PinSite	
18L4/A	24	DIP	PAL		3.0	95/04	Site 40/48	28 PIN PLCC MB
20C1	24	DIP	PAL		3.0	95/12	Site 40/48	
20C1-XV	28	PLCC	PAL		3.0	095/712	ChipSite	
20C1-XV	28	PLCC	PAL		3.0	095/712	PinSite	28 PIN PLCC MB
20L10/A	24	DIP	PAL		3.0	95/06	Site 40/48	
20L10/A-XV	28	PLCC	PAL		3.0	095/706	ChipSite	
20L10/A-XV	28	PLCC	PAL		3.0	095/706	PinSite	28 PIN PLCC MB
20L10A-V	28	PLCC	PAL		3.0	095/606	ChipSite	
20L10A-V	28	PLCC	PAL		3.0	095/606	PinSite	
20L2/A	24	DIP	PAL		3.0	95/05	Site 40/48	28 PIN PLCC MB
20L8-5	24	DIP	PAL		3.6	07/26	Site 40/48	
20L8-5	28	PLCC	PAL		3.6	007/726	ChipSite	
20L8-5	28	PLCC	PAL		3.6	007/726	PinSite	28 PIN PLCC MB
20L8-7	24	DIP	PAL		3.4	07/26	Site 40/48	
20L8-7	28	PLCC	PAL		3.4	007/726	ChipSite	
20L8-7	28	PLCC	PAL		3.6	007/726	PinSite	28 PIN PLCC MB
20L8A	24	DIP	PAL		3.0	95/26	Site 40/48	
20L8A-V	28	PLCC	PAL		3.0	095/626	ChipSite	
20L8A-V	28	PLCC	PAL		3.0	095/626	PinSite	28 PIN PLCC MB
20L8A-XV	28	PLCC	PAL		3.0	095/726	ChipSite	
20L8A-XV	28	PLCC	PAL		3.0	095/726	PinSite	
20L8B	24	DIP	PAL		3.0	95/26	Site 40/48	28 PIN PLCC MB
20L8B-V	28	PLCC	PAL		3.0	095/626	ChipSite	
20L8B-V	28	PLCC	PAL		3.0	095/626	PinSite	
20L8B-V	28	PLCC	PAL		3.0	095/726	ChipSite	28 PIN PLCC MB
20L8B-XV	28	PLCC	PAL		3.0	095/726	PinSite	
20L8B-XV	28	PLCC	PAL		3.0	095/726	PinSite	
20L8D	24	DIP	PAL		2.8	07/26	Site 40/48	28 PIN PLCC MB
20L8D	28	PLCC	PAL		3.4	007/726	ChipSite	
20L8D	28	PLCC	PAL		3.4	007/726	PinSite	
20P8B	24	DIP	PAL		1.5	95/42	Site 40/48	28 PIN PLCC MB
20P8B-V	28	PLCC	PAL		3.3	095/742	ChipSite	
20P8B-V	28	PLCC	PAL		3.3	095/742	PinSite	
20R4-5	24	DIP	PAL		3.6	07/27	Site 40/48	28 PIN PLCC MB
20R4-5	28	PLCC	PAL		3.6	007/727	ChipSite	
20R4-5	28	PLCC	PAL		3.6	007/727	PinSite	
20R4-7	24	DIP	PAL		3.4	07/27	Site 40/48	28 PIN PLCC MB
20R4-7	28	PLCC	PAL		3.4	007/727	ChipSite	
20R4-7	28	PLCC	PAL		3.4	007/727	PinSite	
20R4A	24	DIP	PAL		3.0	95/27	Site 40/48	28 PIN PLCC MB
20R4A-XV	28	PLCC	PAL		3.0	095/727	ChipSite	
20R4A-XV	28	PLCC	PAL		3.0	095/727	PinSite	
20R4B	24	DIP	PAL		3.0	95/27	Site 40/48	28 PIN PLCC MB
20R4B-V	28	PLCC	PAL		3.0	095/627	ChipSite	
20R4B-V	28	PLCC	PAL		3.0	095/627	PinSite	
20R4B-V	28	PLCC	PAL		3.0	095/727	ChipSite	28 PIN PLCC MB
20R4B-XV	28	PLCC	PAL		3.0	095/727	PinSite	
20R4B-XV	28	PLCC	PAL		3.0	095/727	PinSite	
20R4D	24	DIP	PAL		2.8	07/27	Site 40/48	28 PIN PLCC MB
20R4D	28	PLCC	PAL		3.4	007/727	ChipSite	
20R4D	28	PLCC	PAL		3.4	007/727	PinSite	
20R6-5	24	DIP	PAL		3.6	07/27	Site 40/48	28 PIN PLCC MB
20R6-5	28	PLCC	PAL		3.6	007/727	ChipSite	
20R6-5	28	PLCC	PAL		3.6	007/727	PinSite	
20R6-7	24	DIP	PAL		3.4	07/27	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
20R6-7	28	PLCC	PAL		3.4	007/727	ChipSite	
20R6-7	28	PLCC	PAL		3.4	007/727	PinSite	28 PIN PLCC MB
20R6A	24	DIP	PAL		3.0	95/27	Site 40/48	
20R6A-XV	28	PLCC	PAL		3.0	095/727	ChipSite	
20R6A-XV	28	PLCC	PAL		3.0	095/727	PinSite	28 PIN PLCC MB
20R6B	24	DIP	PAL		3.0	95/27	Site 40/48	
20R6B-V	28	PLCC	PAL		3.0	095/627	ChipSite	
20R6B-V	28	PLCC	PAL		3.0	095/627	PinSite	28 PIN PLCC MB
20R6B-XV	28	PLCC	PAL		3.0	095/727	ChipSite	
20R6B-XV	28	PLCC	PAL		3.0	095/727	PinSite	28 PIN PLCC MB
20R6D	24	DIP	PAL		2.8	07/27	Site 40/48	
20R6D	28	PLCC	PAL		3.4	007/727	ChipSite	
20R6D	28	PLCC	PAL		3.4	007/727	PinSite	28 PIN PLCC MB
20R8-5	24	DIP	PAL		3.6	07/27	Site 40/48	
20R8-5	28	PLCC	PAL		3.6	007/727	ChipSite	
20R8-5	28	PLCC	PAL		3.6	007/727	PinSite	28 PIN PLCC MB
20R8-7	24	DIP	PAL		3.4	07/27	Site 40/48	
20R8-7	28	PLCC	PAL		3.4	007/727	ChipSite	
20R8-7	28	PLCC	PAL		3.4	007/727	PinSite	28 PIN PLCC MB
20R8A	24	DIP	PAL		3.0	95/27	Site 40/48	
20R8A-XV	28	PLCC	PAL		3.0	095/727	ChipSite	
20R8A-XV	28	PLCC	PAL		3.0	095/727	PinSite	28 PIN PLCC MB
20R8B	24	DIP	PAL		3.0	95/27	Site 40/48	
20R8B-V	28	PLCC	PAL		3.0	095/627	ChipSite	
20R8B-V	28	PLCC	PAL		3.0	095/627	PinSite	28 PIN PLCC MB
20R8B-XV	28	PLCC	PAL		3.0	095/727	ChipSite	
20R8B-XV	28	PLCC	PAL		3.0	095/727	PinSite	28 PIN PLCC MB
20R8D	24	DIP	PAL		2.8	07/27	Site 40/48	
20R8D	28	PLCC	PAL		3.4	007/727	ChipSite	
20R8D	28	PLCC	PAL		3.4	007/727	PinSite	28 PIN PLCC MB
20RA10	24	DIP	GAL	32	3.5	0D/45	Site 40/48	
20RA10	24	DIP	PAL		2.4	95/45	Site 40/48	
20RA10	28	PLCC	GAL	32	3.5	00D/745	ChipSite	
20RA10	28	PLCC	GAL	32	3.5	00D/745	PinSite	28 PIN PLCC MB
20RA10-V	28	PLCC	PAL		3.4	095/745	ChipSite	
20RA10-V	28	PLCC	PAL		3.4	095/745	PinSite	28 PIN PLCC MB
20RA10-XV	28	PLCC	PAL		1.6	095/745	ChipSite	
20RA10-XV	28	PLCC	PAL		3.0	095/745	PinSite	28 PIN PLCC MB
20RA10UES	24	DIP	GAL	32	3.5	0D/A5	Site 40/48	
20RA10UES	28	PLCC	GAL	32	3.5	00D/7A5	ChipSite	
20RA10UES	28	PLCC	GAL	32	3.5	00D/7A5	PinSite	28 PIN PLCC MB
20RP4B	24	DIP	PAL		1.5	95/97	Site 40/48	
20RP6B	24	DIP	PAL		1.5	95/97	Site 40/48	
20RP8B	24	DIP	PAL		1.5	95/97	Site 40/48	
20V8	24	DIP	GAL	22,49	3.6	0D/57	Site 40/48	
20V8	28	PLCC	GAL	22,49	3.6	00D/757	ChipSite	
20V8	28	PLCC	GAL	22,49	3.6	00D/757	PinSite	28 PIN PLCC MB
20V8-10	24	DIP	GAL	22,49	3.6	0D/57	Site 40/48	
20V8-10	28	PLCC	GAL	22,49	3.6	00D/757	ChipSite	
20V8-10	28	PLCC	GAL	22,49	3.6	00D/757	PinSite	28 PIN PLCC MB
20V8-7	24	DIP	GAL	22,49	3.6	0D/57	Site 40/48	
20V8-7	28	PLCC	GAL	22,49	3.6	00D/757	ChipSite	
20V8-7	28	PLCC	GAL	22,49	3.6	00D/757	PinSite	28 PIN PLCC MB
20V8/A/QS	24	DIP	GAL	22,49	3.6	0D/57	Site 40/48	
20V8/A/QS	28	PLCC	GAL	22,49	3.6	00D/757	ChipSite	
20V8/A/QS	28	PLCC	GAL	22,49	3.6	00D/757	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
20X10	24	DIP	PAL		3.0	95/23	Site 40/48	
20X10A	24	DIP	PAL		3.0	95/36	Site 40/48	
20X10A-V	28	PLCC	PAL		3.0	095/636	ChipSite	28 PIN PLCC MB
20X10A-V	28	PLCC	PAL		3.0	095/636	PinSite	
20X4	24	DIP	PAL		3.0	95/23	Site 40/48	
20X4A	24	DIP	PAL		3.0	95/36	Site 40/48	
20X4A-V	28	PLCC	PAL		3.3	095/736	ChipSite	28 PIN PLCC MB
20X4A-V	28	PLCC	PAL		3.3	095/736	PinSite	
20X8	24	DIP	PAL		3.0	95/23	Site 40/48	
20X8-XV	28	PLCC	PAL		3.0	095/723	ChipSite	28 PIN PLCC MB
20X8-XV	28	PLCC	PAL		3.0	095/723	PinSite	
20X8A	24	DIP	PAL		3.0	95/36	Site 40/48	
20X8A-V	28	PLCC	PAL		3.0	095/636	ChipSite	28 PIN PLCC MB
20X8A-V	28	PLCC	PAL		3.0	095/636	PinSite	
22V10	24	DIP	GAL		3.6	0D/28	Site 40/48	
22V10	28	PLCC	GAL		3.6	00D/728	ChipSite	
22V10	28	PLCC	GAL		3.6	00D/728	PinSite	28 PIN PLCC MB
22V10UES	24	DIP	GAL		3.6	0D/7F	Site 40/48	
22V10UES	28	PLCC	GAL		3.6	00D/77F	ChipSite	28 PIN PLCC MB
22V10UES	28	PLCC	GAL		3.6	00D/77F	PinSite	
2532	24	DIP	EPROM		2.0	19/25	SetSite	
2532	24	DIP	EPROM		2.0	19/25	Site 40/48	
2708	24	DIP	EPROM		2.0	21/27	SetSite	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
2716	24	DIP	EPROM		2.0	19/23	SetSite	
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2758A	24	DIP	EPROM		2.0	19/22	SetSite	
2758A	24	DIP	EPROM		2.0	19/22	Site 40/48	
2758B	24	DIP	EPROM		2.0	19/35	SetSite	
2758B	24	DIP	EPROM		2.0	19/35	Site 40/48	
27C010	32	DIP	EPROM		2.2	5C/CB	SetSite	
27C010	32	DIP	EPROM		2.2	5C/CB	Site 40/48	
27C010	32	PLCC	EPROM		3.1	5C/DE	ChipSite	32 PIN PLCC MB
27C010	32	PLCC	EPROM		3.1	5C/DE	PinSite	
27C040	32	DIP	EPROM		3.5	5C/F6	Site 40/48	
27C1024	40	DIP	EPROM		2.2	5F/A8	SetSite	
27C1024	40	DIP	EPROM		2.2	5F/A8	Site 40/48	
27C128B	28	DIP	EPROM		2.6	5C/51	Site 40/48	
27C128B	28	DIP	EPROM		3.0	5C/51	SetSite	
27C128B	32	PLCC	EPROM		3.4	5C/C2	ChipSite	32 PIN PLCC MB
27C128B	32	PLCC	EPROM		3.4	5C/C2	PinSite	
27C16	24	DIP	EPROM		2.0	19/23	SetSite	
27C16	24	DIP	EPROM		2.0	19/23	Site 40/48	
27C16B	24	DIP	EPROM		2.7	5C/23	Site 40/48	
27C16H	24	DIP	EPROM		2.0	BD/23	SetSite	
27C16H	24	DIP	EPROM		2.0	BD/23	Site 40/48	
27C210	40	DIP	EPROM		3.5	5F/A8	Site 40/48	
27C210	44	PLCC	EPROM		3.9	5F/5F	ChipSite	44 PIN PLCC MB
27C210	44	PLCC	EPROM		3.9	5F/5F	PinSite	
27C256	28	DIP	EPROM		1.7	5D/32	Site 40/48	
27C256	28	DIP	EPROM		2.0	5D/32	SetSite	
27C256B	28	DIP	EPROM		2.5	5C/32	Site 40/48	
27C256B	28	DIP	EPROM		3.0	5C/32	SetSite	
27C256B	32	PLCC	EPROM		3.1	5C/C3	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
27C256B	32	PLCC	EPROM		3.1	5C/C3	PinSite	32 PIN PLCC MB
27C32	24	DIP	EPROM		2.0	19/24	SetSite	
27C32	24	DIP	EPROM		2.0	19/24	Site 40/48	
27C32B	24	DIP	EPROM		2.7	5C/24	SetSite	
27C32B	24	DIP	EPROM		2.7	5C/24	Site 40/48	
27C32H	24	DIP	EPROM		1.3	BD/24	Site 40/48	
27C32H	24	DIP	EPROM		2.0	BD/24	SetSite	
27C512	28	DIP	EPROM		2.0	05E/0A4	SetSite	
27C512	28	DIP	EPROM		3.6	5E/A4	Site 40/48	
27C512A	28	DIP	EPROM		2.2	5E/A4	SetSite	
27C512A	28	DIP	EPROM		2.2	5E/A4	Site 40/48	
27C512A	32	PLCC	EPROM		3.1	5E/C4	ChipSite	32 PIN PLCC MB
27C512A	32	PLCC	EPROM		3.1	5E/C4	PinSite	
27C58A	24	DIP	EPROM		2.0	19/22	SetSite	
27C58A	24	DIP	EPROM		2.0	19/22	Site 40/48	
27C58B	24	DIP	EPROM		2.0	19/35	SetSite	
27C58B	24	DIP	EPROM		2.0	19/35	Site 40/48	
27C64	28	DIP	EPROM		1.7	5D/33	Site 40/48	
27C64	28	DIP	EPROM		2.0	5D/33	SetSite	
27C64B	28	DIP	EPROM		2.3	5C/33	SetSite	
27C64B	28	DIP	EPROM		2.3	5C/33	Site 40/48	
27CP128	28	DIP	EPROM		1.7	5D/BB	Site 40/48	
27CP128	28	DIP	EPROM		2.0	5D/BB	SetSite	
27LC64	28	DIP	EPROM		3.9	5D/33	Site 48	
27LV010	32	PLCC	EPROM		3.9	5C/DE	ChipSite	32 PIN PLCC MB
27LV010	32	PLCC	EPROM		3.9	5C/DE	PinSite	
27P210	40	DIP	EPROM		3.9	5F/A8	Site 40/48	
27P512	28	DIP	EPROM		3.9	5E/A4	Site 40/48	
2816	24	DIP	EEPROM		2.0	37/23	SetSite	
2816	24	DIP	EEPROM		2.0	37/23	Site 40/48	
2864	28	DIP	EEPROM		2.0	C7/A5	Site 40/48	
2864	28	DIP	EEPROM		2.8	C7/A5	SetSite	
48F512	32	DIP	EEPROM		2.8	10F/10B	Site 40/48	
54LS471	20	DIP	PROM		2.2	08/08	Site 40/48	
54S188	16	DIP	PROM		2.2	08/02	Site 40/48	
54S287	16	DIP	PROM		2.2	08/01	Site 40/48	
54S288	16	DIP	PROM		2.2	08/02	Site 40/48	
54S387	16	DIP	PROM		2.2	08/01	Site 40/48	
54S472	20	DIP	PROM		2.2	08/09	Site 40/48	
54S473	20	DIP	PROM		2.2	08/09	Site 40/48	
54S474	24	DIP	PROM		2.2	08/15	Site 40/48	
54S475	24	DIP	PROM		2.2	08/15	Site 40/48	
54S570	16	DIP	PROM		2.2	08/03	Site 40/48	
54S571	16	DIP	PROM		2.2	08/03	Site 40/48	
54S572	18	DIP	PROM		2.2	08/05	Site 40/48	
54S573	18	DIP	PROM		2.2	08/05	Site 40/48	
6001	24	DIP	GAL	49	3.6	0D/4A	Site 40/48	28 PIN PLCC MB
6001	28	PLCC	GAL	49	3.6	00D/74A	ChipSite	
6001	28	PLCC	GAL	49	3.6	00D/74A	PinSite	
74LS471	20	DIP	PROM		2.2	08/08	Site 40/48	
74S188	16	DIP	PROM		2.2	08/02	Site 40/48	
74S287	16	DIP	PROM		2.2	08/01	Site 40/48	
74S288	16	DIP	PROM		2.2	08/02	Site 40/48	
74S288	20	PLCC	PROM		3.4	08/6C	PinSite	20 PIN PLCC MB
74S387	16	DIP	PROM		2.2	08/01	Site 40/48	
74S472	20	DIP	PROM		2.2	08/09	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
74S472	20	PLCC	PROM		2.4	08/7C	ChipSite	20 PIN PLCC MB
74S472	20	PLCC	PROM		3.0	08/7C	PinSite	
74S473	20	DIP	PROM		2.2	08/09	Site 40/48	
74S474	24	DIP	PROM		2.2	08/15	Site 40/48	
74S475	24	DIP	PROM		2.2	08/15	Site 40/48	
74S570	16	DIP	PROM		2.2	08/03	Site 40/48	
74S571	16	DIP	PROM		2.2	08/03	Site 40/48	
74S572	18	DIP	PROM		2.2	08/05	Site 40/48	
74S573	18	DIP	PROM		2.2	08/05	Site 40/48	
77S180	24	DIP	PROM		2.2	08/16	Site 40/48	
77S181	24	DIP	PROM		2.2	08/16	Site 40/48	
77S184	18	DIP	PROM		2.2	08/06	Site 40/48	
77S185	18	DIP	PROM		2.2	08/06	Site 40/48	
77S190	24	DIP	PROM		2.2	08/21	Site 40/48	
77S191	24	DIP	PROM		2.2	08/21	Site 40/48	
77S280	24	DIP	PROM		2.2	08/16	Site 40/48	
77S281	24	DIP	PROM		2.2	08/16	Site 40/48	
77S290	24	DIP	PROM		2.2	08/21	Site 40/48	
77S291	24	DIP	PROM		2.2	08/21	Site 40/48	
77S295	24	DIP	PROM		2.2	08/15	Site 40/48	
77S296	24	DIP	PROM		2.2	08/15	Site 40/48	
77SR181	24	DIP	PROM	1	2.2	08/66	Site 40/48	
77SR183	24	DIP	PROM	1	2.2	08/66	Site 40/48	
77SR191	24	DIP	PROM	3	2.3	08/77	Site 40/48	
77SR193	24	DIP	PROM	3	2.3	08/77	Site 40/48	
77SR25	24	DIP	PROM		2.2	08/81	Site 40/48	
77SR474	24	DIP	PROM		2.2	08/81	Site 40/48	
77SR476	24	DIP	PROM	1	2.2	08/81	Site 40/48	
77X288	16	DIP	PROM		2.2	08/02	Site 40/48	
87S180	24	DIP	PROM		2.2	08/16	Site 40/48	
87S181	24	DIP	PROM		2.2	08/16	Site 40/48	
87S184	18	DIP	PROM		2.2	08/06	Site 40/48	
87S185	18	DIP	PROM		2.2	08/06	Site 40/48	
87S190	24	DIP	PROM		2.2	08/21	Site 40/48	
87S191	24	DIP	PROM		2.2	08/21	Site 40/48	
87S280	24	DIP	PROM		2.2	08/16	Site 40/48	
87S281	24	DIP	PROM		2.2	08/16	Site 40/48	
87S290	24	DIP	PROM		2.2	08/21	Site 40/48	
87S291	24	DIP	PROM		2.2	08/21	Site 40/48	
87S295	24	DIP	PROM		2.2	08/15	Site 40/48	
87S296	24	DIP	PROM		2.2	08/15	Site 40/48	
87S421	24	DIP	PROM		2.8	08/63	Site 40/48	
87SR181	24	DIP	PROM	1	2.2	08/66	Site 40/48	
87SR183	24	DIP	PROM	1	2.2	08/66	Site 40/48	
87SR191	24	DIP	PROM	3	2.3	08/77	Site 40/48	
87SR193	24	DIP	PROM	3	2.3	08/77	Site 40/48	
87SR25	24	DIP	PROM		2.2	08/81	Site 40/48	
87SR474	24	DIP	PROM		2.2	08/81	Site 40/48	
87SR476	24	DIP	PROM	1	2.2	08/81	Site 40/48	
87X288	16	DIP	PROM		2.2	08/02	Site 40/48	
9346	8	DIP	EEPROM		2.8	118/10E	Site 40/48	
93C06	8	DIP	EEPROM		3.1	118/178	Site 40/48	SOIC_15
93C46	8	DIP	EEPROM		3.1	218/10E	Site 40/48	
93C46	14	SO	EEPROM		3.9	218/1F3	PinSite	
93C56	8	DIP	EEPROM		3.1	174/179	Site 40/48	
93C66	8	DIP	EEPROM		3.1	174/17A	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. (continued)</b>								
93CS06	8	DIP	EEPROM		3.1	173/178	Site 40/48	
93CS46	8	DIP	EEPROM		3.1	173/10E	Site 40/48	
93CS66	8	DIP	EEPROM		3.1	175/17A	Site 40/48	
93Z665	24	DIP	PROM		2.2	A0/3E	Site 40/48	
93Z667	24	DIP	PROM		2.2	A0/3E	Site 40/48	
9716	24	DIP	EEPROM		2.0	B3/23	SetSite	
9716	24	DIP	EEPROM		2.0	B3/23	Site 40/48	
9816A	24	DIP	EEPROM		2.0	C3/96	SetSite	
9816A	24	DIP	EEPROM		2.0	C3/96	Site 40/48	
9817	28	DIP	EEPROM		2.5	BF/A2	SetSite	
9817	28	DIP	EEPROM		2.5	BF/A2	Site 40/48	
9817A	28	DIP	EEPROM		2.5	BF/A2	SetSite	
9817A	28	DIP	EEPROM		2.5	BF/A2	Site 40/48	
COP842	20	DIP	MICRO	34	3.2	16F/174	Site 48	
COP8640	28	DIP	MICRO	34	3.3	16F/19E	Site 48	
COP8780C	40	DIP	MICRO	2,21,145	3.9	217/240	Site 48	
COP8780C	44	JLCC	MICRO	2,21,145	3.9	217/242	PinSite	44 PIN PLCC MB
COP8780C	44	PLCC	MICRO	2,21,145	3.9	217/241	PinSite	44 PIN PLCC MB
COP8781C	28	DIP	MICRO	2,21,145	3.9	217/246	Site 48	
COP8782C	20	DIP	MICRO	2,21,145	3.9	217/245	Site 48	
COP880	40	DIP	MICRO	34	3.3	16F/19F	Site 48	
COP881	28	DIP	MICRO	34	3.3	16F/19E	Site 48	
COP884	28	DIP	MICRO	34	3.3	16F/19E	Site 48	
COP888	44	JLCC	MICRO		3.3	16F/175	PinSite	44 PIN PLCC MB
HPC46083	68	JLCC	MICRO		3.0	03C/165	PinSite	68 PIN PLCC MB
HPC467064	68	JLCC	MICRO	144	3.8	216/23F	PinSite	68 PIN PLCC MB
MAPL128	28	PLCC	FPLA		3.4	0D/C0	ChipSite	
MAPL128	28	PLCC	FPLA		3.4	0D/C0	PinSite	28 PIN PLCC MB
MAPL144	44	PLCC	MAPL		3.8	21E/3C0	PinSite	44 PIN PLCC MB

**Oki Electric Industry Co., Ltd.**

2532	24	DIP	EPROM		2.0	19/25	SetSite	
2532	24	DIP	EPROM		2.0	19/25	Site 40/48	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
2708	24	DIP	EPROM		2.8	21/27	SetSite	
271000	32	DIP	EPROM		2.8	5C/CB	Site 40/48	
271000	32	DIP	EPROM		3.0	5C/CB	SetSite	
27128	28	DIP	EPROM		2.0	79/51	SetSite	
27128	28	DIP	EPROM		2.0	79/51	Site 40/48	
27128A	28	DIP	EPROM		2.7	5C/51	SetSite	
27128A	28	DIP	EPROM		2.7	5C/51	Site 40/48	
2716	24	DIP	EPROM		2.0	19/23	SetSite	
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
27256	28	DIP	EPROM		3.0	5C/32	SetSite	
27256	28	DIP	EPROM		3.0	5C/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
27512	28	DIP	EPROM		2.2	5E/A4	SetSite	
27512	28	DIP	EPROM		2.2	5E/A4	Site 40/48	
2758	24	DIP	EPROM		2.0	19/22	SetSite	
2758	24	DIP	EPROM		2.0	19/22	Site 40/48	
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
2764A	28	DIP	EPROM		2.2	5C/33	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Oki Electric Industry Co., Ltd. (continued)</b>								
27C2000	32	DIP	EPROM		3.1	5C/F5	SetSite	
27C2000	32	DIP	EPROM		3.1	5C/F5	Site 40/48	
27C256H	28	DIP	EPROM		2.8	5C/32	Site 40/48	
2816A	24	DIP	EEPROM		2.2	B7/23	Site 40/48	
2816A	24	DIP	EEPROM		2.8	B7/23	SetSite	
28C16A	24	DIP	EEPROM		2.2	B7/23	Site 40/48	
28C16A	24	DIP	EEPROM		2.8	B7/23	SetSite	
28C64A	28	DIP	EEPROM		2.8	CA/98	SetSite	
28C64A	28	DIP	EEPROM		2.8	CA/98	Site 40/48	
<b>Omni-Wave Semiconductor</b>								
27C101	32	DIP	EPROM		3.5	8F/CB	Site 40/48	
27C101	32	DIP	EPROM		3.9	8F/CB	SetSite	
27C1024	40	DIP	EPROM		3.5	8E/A8	Site 40/48	
27C256	28	DIP	EPROM		3.5	93/32	Site 40/48	
<b>PLX Technology</b>								
448	24	DIP	RPLD		2.4	12/2F	Site 40/48	
464	24	DIP	RPLD		2.7	12/2F	Site 40/48	
<b>Panasonic Semiconductor</b>								
27C256	28	DIP	EPROM		3.0	5C/32	SetSite	
27C256	28	DIP	EPROM		3.0	5C/32	Site 40/48	
27C512	28	DIP	EPROM		3.0	5E/A4	SetSite	
27C512	28	DIP	EPROM		3.0	5E/A4	Site 40/48	
27C64A	28	DIP	EPROM		3.0	5C/33	Site 40/48	
<b>Plus Logic</b>								
2020	84	JLCC	FPGA	94	3.4	18F/084	PinSite	84 PIN PLCC MB
2020	84	PLCC	FPGA	94	3.4	18F/084	PinSite	84 PIN PLCC MB
<b>Raytheon</b>								
29613/A	16	DIP	PROM		2.1	11/03	Site 40/48	
29621/A	20	DIP	PROM		2.1	11/09	Site 40/48	
29623/A	20	DIP	PROM		2.1	11/09	Site 40/48	
29631/A	24	DIP	PROM		2.1	11/16	Site 40/48	
29633/A	24	DIP	PROM		2.1	11/16	Site 40/48	
29651/A	18	DIP	PROM		2.1	11/06	Site 40/48	
29653/A	18	DIP	PROM		2.1	11/06	Site 40/48	
29671/A	24	DIP	PROM		2.1	11/63	Site 40/48	
29671/A	28	LCC	PROM	44	2.6	11/8E	ChipSite	
29671/A	28	LCC	PROM		3.0	11/8E	PinSite	28 PIN LCC MB
29671SM	24	DIP	PROM		2.1	11/63	Site 40/48	
29673	24	DIP	PROM		2.1	11/63	Site 40/48	
29673SM	24	DIP	PROM		2.1	11/63	Site 40/48	
29681/A	24	DIP	PROM		2.1	11/21	Site 40/48	
29681SM	24	DIP	PROM		2.1	11/21	Site 40/48	
29683/A	24	DIP	PROM		2.1	11/21	Site 40/48	
29683SM	24	DIP	PROM		2.1	11/21	Site 40/48	
29771	24	DIP	PROM		2.6	13C/063	Site 40/48	
29771SM	24	DIP	PROM		2.6	13D/063	Site 40/48	
29773	24	DIP	PROM		2.6	13C/063	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Raytheon (continued)</b>								
29773SM	24	DIP	PROM		2.6	13D/063	Site 40/48	
29791	24	DIP	PROM		2.6	13C/067	Site 40/48	
29791DM	24	DIP	PROM		2.6	13D/067	Site 40/48	
29793	24	DIP	PROM		2.6	13C/067	Site 40/48	
29793DM	24	DIP	PROM		2.6	13D/067	Site 40/48	
<b>Ricoh Corporation</b>								
10P8A	20	DIP	EPLD		1.0	38/51	Site 40/48	
10P8B	20	DIP	EPLD		1.0	39/51	Site 40/48	
10P8B	20	SO	EPLD		2.6	039/851	ChipSite	
10P8B	20	SO	EPLD		3.0	039/851	PinSite	SOIC_30
12P6A	20	DIP	EPLD		1.0	38/52	Site 40/48	
12P6B	20	DIP	EPLD		1.0	39/52	Site 40/48	
14P4A	20	DIP	EPLD		1.0	38/53	Site 40/48	
14P4B	20	DIP	EPLD		1.0	39/53	Site 40/48	
16P2A	20	DIP	EPLD		1.0	38/54	Site 40/48	
16P2B	20	DIP	EPLD		1.0	39/54	Site 40/48	
16P8B	20	DIP	EPLD		1.0	39/30	Site 40/48	
16P8B	20	SO	EPLD		2.6	039/830	ChipSite	
16P8B	20	SO	EPLD		3.0	039/830	PinSite	SOIC_30
16P8F	20	DIP	EPLD		3.8	1C9/06F	Site 40/48	
16RP4B	20	DIP	EPLD		1.0	39/31	Site 40/48	
16RP4F	20	DIP	EPLD		3.8	1C8/06F	Site 40/48	
16RP6B	20	DIP	EPLD		1.0	39/31	Site 40/48	
16RP6F	20	DIP	EPLD		3.8	1C7/06F	Site 40/48	
16RP8B	20	DIP	EPLD		1.0	39/31	Site 40/48	
16RP8B	20	SO	EPLD		2.6	039/831	ChipSite	
16RP8B	20	SO	EPLD		3.0	039/831	PinSite	SOIC_30
16RP8F	20	DIP	EPLD		3.8	1C6/06F	Site 40/48	
2020	84	JLCC	FPGA	94	3.4	18F/084	PinSite	84 PIN PLCC MB
2020	84	PLCC	FPGA	94	3.4	18F/084	PinSite	84 PIN PLCC MB
204	20	DIP	EPLD		2.6	39/6F	Site 40/48	
241	24	DIP	EPLD		2.4	39/5A	Site 40/48	
241	28	PLCC	EPLD		2.4	039/75A	ChipSite	
241	28	PLCC	EPLD		3.0	039/75A	PinSite	28 PIN PLCC MB
242	24	DIP	EPLD		3.8	39/F7	Site 40/48	
27C256	28	DIP	EPROM		2.1	93/32	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C32	24	DIP	EPROM		2.0	27/24	SetSite	
27C32	24	DIP	EPROM		2.0	27/24	Site 40/48	
27C64	28	DIP	EPROM		2.0	79/33	SetSite	
27C64	28	DIP	EPROM		2.0	79/33	Site 40/48	
5H32	24	DIP	EPROM		2.0	27/24	SetSite	
5H32	24	DIP	EPROM		2.0	27/24	Site 40/48	
687C64	24	DIP	EPROM		1.0	D9/29	Site 40/48	
<b>Rockwell International</b>								
87C64	28	DIP	EPROM		1.0	35/33	Site 40/48	
87C64	28	DIP	EPROM		2.8	35/33	SetSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SEEQ Technology, Inc.</b>								
20RA10Z	24	DIP	EEPAL	34	2.3	9E/45	Site 40/48	28 PIN PLCC MB
20RA10Z	28	PLCC	EEPAL		2.7	09E/745	ChipSite	
20RA10Z	28	PLCC	EEPAL		3.0	09E/745	PinSite	
26V12	28	DIP	EEPAL		2.7	9E/4E	Site 48	
27128	28	DIP	EPROM		2.2	79/51	SetSite	
27128	28	DIP	EPROM	34	2.2	79/51	Site 40/48	28 PIN PLCC MB
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
27C256	28	DIP	EPROM		2.1	93/32	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48	
2816A	24	DIP	EEPROM	34	2.1	B7/23	SetSite	28 PIN PLCC MB
2816A	24	DIP	EEPROM		2.1	B7/23	Site 40/48	
2816AH	24	DIP	EEPROM		2.0	DF/23	SetSite	
2816AH	24	DIP	EEPROM		2.0	DF/23	Site 40/48	
2817A	28	DIP	EEPROM		2.5	BF/A2	SetSite	
2817A	28	DIP	EEPROM	34	2.5	BF/A2	Site 40/48	28 PIN PLCC MB
2817AH	28	DIP	EEPROM		2.5	BF/A2	SetSite	
2817AH	28	DIP	EEPROM		2.5	BF/A2	Site 40/48	
2864	28	DIP	EEPROM		1.5	C9/A6	Site 40/48	
2864	28	DIP	EEPROM		2.8	C9/A6	SetSite	
2864H	28	DIP	EEPROM	34	1.5	C9/A6	Site 40/48	28 PIN PLCC MB
2864H	28	DIP	EEPROM		2.0	C9/A6	SetSite	
28C010	32	DIP	EEPROM		2.2	0B8/110	Site 40/48	
28C256	28	DIP	EEPROM		2.0	B8/99	SetSite	
28C256	28	DIP	EEPROM		2.0	B8/99	Site 40/48	
28C256	32	PLCC	EEPROM	36	3.8	B8/99	ChipSite	32 PIN PLCC MB
28C256	32	PLCC	EEPROM		3.8	B8/99	PinSite	
28C256A	28	DIP	EEPROM		3.5	BA/99	SetSite	
28C256A	28	DIP	EEPROM		3.5	BA/99	Site 40/48	
28C256A	32	PLCC	EEPROM		3.8	BA/99	ChipSite	
28C256A	32	PLCC	EEPROM	36	3.8	BA/99	PinSite	32 PIN PLCC MB
28C64	28	DIP	EEPROM		2.0	B8/98	SetSite	
28C64	28	DIP	EEPROM		2.0	B8/98	Site 40/48	
28C64	32	PLCC	EEPROM		2.4	B8/5D	ChipSite	
28C64	32	PLCC	EEPROM		3.0	B8/5D	PinSite	
28C65	28	DIP	EEPROM	36	3.6	B8/98	SetSite	32 PIN PLCC MB
28C65	28	DIP	EEPROM		3.6	B8/98	Site 40/48	
36C16	24	DIP	EEPROM		2.3	9C/21	Site 40/48	
36C32	24	DIP	EEPROM		2.6	9C/63	SetSite	
36C32	24	DIP	EEPROM		2.6	9C/63	Site 40/48	
38C32	28	DIP	EEPROM	36	2.6	13B/12E	SetSite	32 PIN PLCC MB
38C32	28	DIP	EEPROM		2.6	13B/12E	Site 40/48	
47F010	32	DIP	FLASH		3.0	147/10C	Site 40/48	
47F512	32	DIP	FLASH		2.8	147/10B	Site 40/48	
48128	28	DIP	EEPROM		1.7	B4/51	Site 40/48	
48F010	32	DIP	FLASH	36	3.4	1AC/10C	Site 40/48	32 PIN PLCC MB
48F010	32	PLCC	FLASH		3.4	1AC/15A	ChipSite	
48F010	32	PLCC	FLASH		3.4	1AC/15A	PinSite	
48F512	32	DIP	FLASH		3.4	1AC/10B	Site 40/48	
48F512	32	PLCC	FLASH		3.4	1AC/11E	ChipSite	
48F512	32	PLCC	FLASH	36	3.4	1AC/11E	PinSite	32 PIN PLCC MB
52B13	24	DIP	EEPROM		2.0	A5/96	SetSite	
52B13	24	DIP	EEPROM		2.0	A5/96	Site 40/48	
52B13H	24	DIP	EEPROM		2.0	B9/96	SetSite	
52B13H	24	DIP	EEPROM		2.0	B9/96	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SEEQ Technology, Inc. (continued)</b>								
52B33	28	DIP	EEPROM		2.2	AB/98	SetSite	
52B33	28	DIP	EEPROM		2.2	AB/98	Site 40/48	
52B33H	28	DIP	EEPROM		2.0	F1/98	SetSite	
52B33H	28	DIP	EEPROM		2.0	F1/98	Site 40/48	
52B33H	32	LCC	EEPROM	44	1.4	0F1/798	ChipSite	
52B33H	32	LCC	EEPROM		3.0	0F1/798	PinSite	32 PIN LCC MB
5516A	24	DIP	EEPROM		2.1	B7/23	SetSite	
5516A	24	DIP	EEPROM		2.1	B7/23	Site 40/48	
<b>SGS-Thomson Microelectronics</b>								
16V8/AS	20	DIP	GAL	22,49	2.8	14/55	Site 40/48	
16V8/AS	20	PLCC	GAL	22,49	2.8	014/755	ChipSite	
16V8/AS	20	PLCC	GAL	22,49	3.0	014/755	PinSite	20 PIN PLCC MB
20V8/AS	24	DIP	GAL	22,49	2.8	14/57	Site 40/48	
20V8/AS	28	PLCC	GAL	22,49	3.2	014/657	ChipSite	
20V8/AS	28	PLCC	GAL	22,49	3.2	014/657	PinSite	28 PIN PLCC MB
20V8/AS-J	28	PLCC	GAL	22,49	3.1	014/757	ChipSite	
20V8/AS-J	28	PLCC	GAL	22,49	3.1	014/757	PinSite	28 PIN PLCC MB
24C01B	8	DIP	EEPROM		3.6	F20/18F	Site 40/48	
24C02	8	DIP	EEPROM		3.5	120/119	Site 48	
24C02A	8	DIP	EEPROM		3.6	120/119	Site 40/48	
24C04B	8	DIP	EEPROM		3.6	205/11A	Site 40/48	
24C08B	8	DIP	EEPROM		3.6	209/1EE	Site 40/48	
2532	24	DIP	EPROM		2.0	19/25	SetSite	
2532	24	DIP	EPROM		2.0	19/25	Site 40/48	
25C02A	8	DIP	EEPROM		3.7	205/119	Site 40/48	
25C02A	8	SO	EEPROM		3.9	205/119	PinSite	SOIC_15
25C04	8	DIP	EEPROM		3.7	205/11A	Site 40/48	
25C04	14	SO	EEPROM		3.9	205/201	PinSite	SOIC_15
27128A	28	DIP	EPROM		2.1	93/51	SetSite	
27128A	28	DIP	EPROM		2.1	93/51	Site 40/48	
2716	24	DIP	EPROM		2.0	19/23	SetSite	
2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
27256	28	DIP	EPROM		2.1	93/32	SetSite	
27256	28	DIP	EPROM		2.1	93/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	
27512	28	DIP	EPROM		1.6	7F/A4	Site 40/48	
27512	28	DIP	EPROM		2.8	7F/A4	SetSite	
2764	28	DIP	EPROM		2.2	79/33	SetSite	
2764	28	DIP	EPROM		2.2	79/33	Site 40/48	
2764A	28	DIP	EPROM		3.5	93/33	SetSite	
2764A	28	DIP	EPROM		3.5	93/33	Site 40/48	
27C1000	32	DIP	EPROM		2.7	5C/CC	Site 40/48	
27C1000	32	DIP	EPROM		3.2	5C/CC	SetSite	
27C1001	32	DIP	EPROM		2.7	5C/CB	SetSite	
27C1001	32	DIP	EPROM		2.7	5C/CB	Site 40/48	
27C1001	32	PLCC	EPROM		3.4	5C/DE	ChipSite	
27C1001	32	PLCC	EPROM		3.4	5C/DE	PinSite	32 PIN PLCC MB
27C1024	40	DIP	EPROM		2.2	5F/A8	Site 40/48	
27C1024	40	DIP	EPROM		2.8	5F/A8	SetSite	
27C1024	44	PLCC	EPROM		3.8	05F/7A8	ChipSite	
27C1024	44	PLCC	EPROM		3.8	05F/7A8	PinSite	44 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics (continued)</b>								
27C16	24	DIP	EPROM		2.0	19/23	SetSite	
27C16	24	DIP	EPROM		2.0	19/23	Site 40/48	
27C2001	32	DIP	EPROM		3.2	5C/F5	Site 40/48	
27C2001	32	DIP	EPROM		3.9	5C/F5	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C256	32	PLCC	EPROM		3.0	93/C3	ChipSite	32 PIN PLCC MB
27C256	32	PLCC	EPROM		3.0	93/C3	PinSite	
27C256B	28	DIP	EPROM		2.7	5C/32	SetSite	
27C256B	28	DIP	EPROM		2.7	5C/32	Site 40/48	
27C256B	32	PLCC	EPROM		3.3	5C/C3	ChipSite	
27C256B	32	PLCC	EPROM		3.3	5C/C3	PinSite	32 PIN PLCC MB
27C32	24	DIP	EPROM		2.0	19/24	Site 40/48	
27C32	24	DIP	EPROM		2.8	19/24	SetSite	
27C4001	32	DIP	EPROM		3.3	5C/F6	SetSite	
27C4001	32	DIP	EPROM		3.3	5C/F6	Site 40/48	
27C4002	40	DIP	EPROM		3.2	5F/89	Site 40/48	44 PIN PLCC MB
27C4002	40	DIP	EPROM		3.3	5F/89	SetSite	
27C4002	44	PLCC	EPROM		3.9	05F/1C7	ChipSite	
27C4002	44	PLCC	EPROM		3.9	05F/1C7	PinSite	
27C512	28	DIP	EPROM		2.7	144/0A4	Site 40/48	
27C512	28	DIP	EPROM		2.8	144/0A4	SetSite	32 PIN PLCC MB
27C512	32	PLCC	EPROM		3.4	144/0C4	ChipSite	
27C512	32	PLCC	EPROM		3.4	144/0C4	PinSite	
27C516	40	DIP	EPROM		3.8	05F/1B4	SetSite	
27C516	40	DIP	EPROM		3.8	05F/1B4	Site 40/48	
27C516	44	PLCC	EPROM		3.8	05F/7B4	ChipSite	44 PIN PLCC MB
27C516	44	PLCC	EPROM		3.8	05F/7B4	PinSite	
27C64	28	DIP	EPROM		2.1	93/33	SetSite	
27C64	28	DIP	EPROM		2.1	93/33	Site 40/48	
27C64	32	PLCC	EPROM		2.1	93/C1	ChipSite	
27C64	32	PLCC	EPROM		3.0	93/C1	PinSite	32 PIN PLCC MB
27C64A	28	DIP	EPROM		3.0	93/33	Site 40/48	
28F256	32	DIP	FLASH		3.4	113/10A	Site 40/48	
59C11	8	DIP	EEPROM		3.2	123/11D	Site 40/48	
6001/AS	24	DIP	GAL	49	3.1	14/4A	Site 40/48	
6001/AS	28	PLCC	GAL	49	3.3	14/4A	ChipSite	28 PIN PLCC MB
6001/AS	28	PLCC	GAL	49	3.3	14/4A	PinSite	
62E10	20	DIP	MICRO	2,140,21,170,130	3.9	235/264	Site 40/48	
62E15	28	DIP	MICRO	2,140,21,170,130	3.9	235/265	Site 40/48	
71180	24	DIP	PROM		2.2	92/16	Site 40/48	
71181	24	DIP	PROM		2.2	92/16	Site 40/48	2
71190	24	DIP	PROM		2.2	92/21	Site 40/48	
71191	24	DIP	PROM		2.2	92/21	Site 40/48	
71280	24	DIP	PROM		2.2	92/16	Site 40/48	
71281	24	DIP	PROM		2.2	92/16	Site 40/48	
71290	24	DIP	PROM		2.2	92/21	Site 40/48	
71291	24	DIP	PROM		2.2	92/21	Site 40/48	
71320	24	DIP	PROM		2.2	92/63	Site 40/48	
71321	24	DIP	PROM		2.2	92/63	Site 40/48	
71640	24	DIP	PROM		2.2	0A/67	Site 40/48	
71641	24	DIP	PROM		2.2	0A/67	Site 40/48	32 PIN PLCC MB
87C257	28	DIP	EPROM		3.2	5C/E2	SetSite	
87C257	28	DIP	EPROM		3.2	5C/E2	Site 40/48	
87C257	32	PLCC	EPROM		3.5	5C/E3	ChipSite	
87C257	32	PLCC	EPROM		3.5	5C/E3	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics (continued)</b>								
9346	8	DIP	EEPROM		3.2	118/10E	Site 40/48	
93C06	8	DIP	EEPROM		3.6	118/178	Site 40/48	
93C06B	8	DIP	EEPROM		3.6	118/178	Site 40/48	
93C46	8	DIP	EEPROM		3.6	118/10E	Site 40/48	
93C46AB	8	DIP	EEPROM		3.6	118/10E	Site 40/48	
93CS46	8	DIP	EEPROM		3.6	173/10E	Site 40/48	
93CS46B	8	DIP	EEPROM		3.6	173/10E	Site 40/48	
93CS56	8	DIP	EEPROM		3.6	175/179	Site 40/48	
93CS56B	8	DIP	EEPROM		3.6	175/179	Site 40/48	
T2716	24	DIP	EPROM		2.0	19/23	SetSite	
T2716	24	DIP	EPROM		2.0	19/23	Site 40/48	
T2764	28	DIP	EPROM		1.0	35/33	Site 40/48	
T2764	28	DIP	EPROM		2.0	35/33	SetSite	
Z86E11	40	DIP	MICRO		2.2	0F/F9	Site 40/48	
Z86E21	40	DIP	MICRO		2.2	0F/FA	Site 40/48	
<b>SMOS Systems, Inc.</b>								
27128H	28	DIP	EPROM		2.0	79/51	SetSite	
27128H	28	DIP	EPROM		2.0	79/51	Site 40/48	
27C256H	28	DIP	EPROM		2.1	93/32	SetSite	
27C256H	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C64H	28	DIP	EPROM		2.0	79/33	SetSite	
27C64H	28	DIP	EPROM		2.0	79/33	Site 40/48	
<b>Samsung Semiconductor, Inc.</b>								
16L8	20	DIP	CPL		3.0	9D/17	Site 40/48	
16L8	20	PLCC	CPL		3.0	09D/717	ChipSite	
16L8	20	PLCC	CPL		3.0	09D/717	PinSite	20 PIN PLCC MB
16R4	20	DIP	CPL		3.0	9D/24	Site 40/48	
16R4	20	PLCC	CPL		3.0	09D/724	ChipSite	
16R4	20	PLCC	CPL		3.0	09D/724	PinSite	20 PIN PLCC MB
16R6	20	DIP	CPL		3.0	9D/24	Site 40/48	
16R6	20	PLCC	CPL		3.0	09D/724	ChipSite	
16R6	20	PLCC	CPL		3.0	09D/724	PinSite	20 PIN PLCC MB
16R8	20	DIP	CPL		3.0	9D/24	Site 40/48	
16R8	20	PLCC	CPL		3.0	09D/724	ChipSite	
16R8	20	PLCC	CPL		3.0	09D/724	PinSite	20 PIN PLCC MB
20L10	24	DIP	CPL		3.0	9D/06	Site 40/48	
20L10	28	PLCC	CPL		3.0	09D/706	ChipSite	
20L10	28	PLCC	CPL		3.0	09D/706	PinSite	28 PIN PLCC MB
20L8	24	DIP	CPL		3.0	9D/26	Site 40/48	
20L8	28	PLCC	CPL		3.0	09D/726	ChipSite	
20L8	28	PLCC	CPL		3.0	09D/726	PinSite	28 PIN PLCC MB
20R4	24	DIP	CPL		3.0	9D/27	Site 40/48	
20R4	28	PLCC	CPL		3.0	09D/727	ChipSite	
20R4	28	PLCC	CPL		3.0	09D/727	PinSite	28 PIN PLCC MB
20R6	24	DIP	CPL		3.0	9D/27	Site 40/48	
20R6	28	PLCC	CPL		3.0	09D/727	ChipSite	
20R6	28	PLCC	CPL		3.0	09D/727	PinSite	28 PIN PLCC MB
20R8	24	DIP	CPL		3.0	9D/27	Site 40/48	
20R8	28	PLCC	CPL		3.0	09D/727	ChipSite	
20R8	28	PLCC	CPL		3.0	09D/727	PinSite	28 PIN PLCC MB
22V10	24	DIP	EPAL		3.0	9D/28	Site 40/48	
2816A	24	DIP	EEPROM		2.1	B7/23	SetSite	
2816A	24	DIP	EEPROM		2.1	B7/23	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
Samsung Semiconductor, Inc. (continued)								
2817A	28	DIP	EEPROM		2.5	BF/A2	SetSite	
2817A	28	DIP	EEPROM		2.5	BF/A2	Site 40/48	
2864A	28	DIP	EEPROM		2.0	C3/98	SetSite	
2864A	28	DIP	EEPROM		2.0	C3/98	Site 40/48	
2864AH	28	DIP	EEPROM		1.5	C3/98	Site 40/48	
2864AH	28	DIP	EEPROM		2.0	C3/98	SetSite	
2865A	28	DIP	EEPROM		1.5	C9/A6	Site 40/48	
2865A	28	DIP	EEPROM		2.0	C9/A6	SetSite	
2865AH	28	DIP	EEPROM		1.5	C9/A6	Site 40/48	
2865AH	28	DIP	EEPROM		2.0	C9/A6	SetSite	
28C16	24	DIP	EEPROM		2.8	CA/23	Site 40/48	
28C17	24	DIP	EEPROM		2.8	CA/A2	Site 40/48	
28C256	28	DIP	EEPROM		2.8	BA/99	Site 40/48	
28C256	32	PLCC	EEPROM		3.8	B7/99	ChipSite	32 PIN PLCC MB
28C256	32	PLCC	EEPROM		3.8	B7/99	PinSite	
28C64	28	DIP	EEPROM		2.8	CA/98	Site 40/48	
28C65	28	DIP	EEPROM		2.8	CA/A6	Site 40/48	
Seiko Epson								
BWB513	XO	68	CARD	EPROM	154	3.8	5C/CB	Site 40/48
HWB513	XO	68	CARD	EPROM	154	3.8	186/118	Site 40/48
Seiko Instruments Inc.								
2100R/RF	8	DIP	EPROM		3.7	1F4/1F9	Site 40/48	
22H10	18	DIP	NOVRAM		3.9	184/191	Site 48	
22H12R/I	18	DIP	NOVRAM		3.8	184/194	Site 48	
22S10R/I	18	DIP	NOVRAM		3.9	184/191	Site 48	
22S12R/I	18	DIP	NOVRAM		3.8	184/194	Site 48	
24H45R/I	8	DIP	NOVRAM		3.8	18A/197	Site 40/48	
24S30R/I	8	DIP	NOVRAM		3.9	222/24C	Site 40/48	
24S45R/I	8	DIP	NOVRAM		3.8	18A/197	Site 40/48	
2840A(R)	24	DIP	EEPROM		3.7	C4/96	Site 40/48	
2911R/I	8	DIP	EEPROM		3.7	1E3/10E	Site 40/48	
2913AR/I	8	DIP	EEPROM		3.7	1E7/10E	Site 40/48	
2913CR/I	8	DIP	EEPROM		3.7	1E8/10E	Site 40/48	
2914AR/I	8	DIP	EEPROM		3.8	118/10E	Site 40/48	
2914R/RF	8	DIP	EEPROM		3.7	1E4/10E	Site 40/48	
2917R/I	8	DIP	EEPROM		3.7	1E5/10E	Site 40/48	
2918R/I	8	DIP	EEPROM		3.7	1E6/11D	Site 40/48	
2919AR/I	8	DIP	EEPROM		3.7	1E9/10E	Site 40/48	
2919CR/I	8	DIP	EEPROM		3.7	1E9/10E	Site 40/48	
2919GR/I	8	DIP	EEPROM		3.7	1EA/10E	Site 40/48	
2922AR/I	8	DIP	EEPROM		3.8	1EB/1F4	Site 40/48	
2923CR/I	8	DIP	EEPROM		3.7	1EC/1F4	Site 40/48	
2924AR/I	8	DIP	EEPROM		3.7	1EC/1F4	Site 40/48	
2929AR/I	8	DIP	EEPROM		3.7	1ED/1F4	Site 40/48	
2929CR/I	8	DIP	EEPROM		3.7	1ED/1F4	Site 40/48	
2929GR/I	8	DIP	EEPROM		3.7	1EE/1F4	Site 40/48	
2933CR/I	8	DIP	EEPROM		3.7	1EF/1F5	Site 40/48	
2934AR/I	8	DIP	EEPROM		3.8	1EF/1F5	Site 40/48	
2939AR/I	8	DIP	EEPROM		3.7	1F0/1F5	Site 40/48	
2939CR/I	8	DIP	EEPROM		3.7	1F0/1F5	Site 40/48	
2939GR/I	8	DIP	EEPROM		3.7	1F1/1F5	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Seiko Instruments Inc. (continued)</b>								
2940I/IF	8	DIP	EEPROM		3.7	1F2/1F6	Site 40/48	
2961I/IF	8	DIP	EEPROM		3.7	1F3/1F7	Site 40/48	
2980I/IF	8	DIP	EEPROM		3.7	1FD/1F8	Site 40/48	
<b>Sharp Corporation</b>								
571000	32	DIP	EPROM		2.8	158/0CC	Site 40/48	
571000	32	DIP	EPROM		3.0	158/0CC	SetSite	
571001	32	DIP	EPROM		2.8	158/0CB	Site 40/48	
57126	28	DIP	EPROM		2.1	93/51	SetSite	
57126	28	DIP	EPROM		2.1	93/51	Site 40/48	
57127	28	DIP	EPROM		2.1	93/51	SetSite	
57127	28	DIP	EPROM		2.1	93/51	Site 40/48	
57128	28	DIP	EPROM		2.0	5C/51	Site 40/48	
57128	28	DIP	EPROM		2.8	5C/51	SetSite	
57191	24	DIP	EPROM		2.0	7C/21	Site 40/48	
57191	24	DIP	EPROM		2.8	7C/21	SetSite	
57254	28	DIP	EPROM		2.3	93/32	SetSite	
57254	28	DIP	EPROM		2.3	93/32	Site 40/48	
57255	28	DIP	EPROM		2.3	93/32	SetSite	
57255	28	DIP	EPROM		2.3	93/32	Site 40/48	
57256	28	DIP	EPROM		2.5	3B/32	SetSite	
57256	28	DIP	EPROM		2.5	3B/32	Site 40/48	
57257J-12	28	DIP	EPROM		3.8	158/032	SetSite	
57257J-12	28	DIP	EPROM		3.8	158/032	Site 40/48	
5749	24	DIP	EPROM		2.0	7C/67	SetSite	
5749	24	DIP	EPROM		2.0	7C/67	Site 40/48	
57512	28	DIP	EPROM		2.8	157/0A4	Site 40/48	
57512	28	DIP	EPROM		3.0	157/0A4	SetSite	
5762	28	DIP	EPROM		2.1	93/33	SetSite	
5762	28	DIP	EPROM		2.1	93/33	Site 40/48	
5763	28	DIP	EPROM		2.1	93/33	SetSite	
5763	28	DIP	EPROM		2.1	93/33	Site 40/48	
5764	28	DIP	EPROM		2.0	5C/33	SetSite	
5764	28	DIP	EPROM		2.0	5C/33	Site 40/48	
<b>Signetics Corporation</b>								
100149	16	DIP	PROM		3.1	B1/D7	Site 40/48	
100149A	16	DIP	PROM		3.6	B1/D7	Site 40/48	
100149B	16	DIP	PROM		3.6	B1/D7	Site 40/48	
10020EV8	24	DIP	PAL		3.0	140/06D	Site 40/48	
10020EV8	28	PLCC	PAL	119	3.5	140/76D	ChipSite	
10020EV8	28	PLCC	PAL	119	3.5	140/76D	PinSite	28 PIN PLCC MB
10149	16	DIP	PROM	19	3.1	B1/D7	Site 40/48	
10149A	16	DIP	PROM		3.1	B1/D7	Site 40/48	
10H20EV8	24	DIP	PAL	28	2.7	140/13B	Site 40/48	
10H20EV8	28	PLCC	PAL	28,119	2.7	140/13C	ChipSite	
10H20EV8	28	PLCC	PAL	28,119	3.0	140/13C	PinSite	28 PIN PLCC MB
10P256	18	DIP	PROM		3.6	1CC/1E7	Site 48	
2500	40	DIP	EPLD		3.6	131/125	Site 40/48	
27C010	32	DIP	EPROM		3.4	5C/CB	Site 40/48	
27C210	40	DIP	EPROM		2.7	5F/A8	Site 40/48	
27C210	40	DIP	EPROM		3.0	5F/A8	SetSite	
27C210	44	PLCC	EPROM		2.7	5F/88	ChipSite	
27C210	44	PLCC	EPROM		3.0	5F/88	PinSite	44 PIN PLCC MB
27C256	28	DIP	EPROM		2.2	5C/32	SetSite	
27C256	28	DIP	EPROM		2.2	5C/32	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Signetics Corporation (continued)</b>								
27C256	32	PLCC	EPROM		2.4	5C/C3	ChipSite	32 PIN PLCC MB
27C256	32	PLCC	EPROM		3.0	5C/C3	PinSite	
27C512	28	DIP	EPROM		2.5	5E/A4	SetSite	
27C512	28	DIP	EPROM		2.5	5E/A4	Site 40/48	
27C512	32	PLCC	EPROM		2.7	5E/C4	ChipSite	32 PIN PLCC MB
27C512	32	PLCC	EPROM		3.0	5E/C4	PinSite	
27C64A	28	DIP	EPROM		2.2	5C/33	SetSite	
27C64A	28	DIP	EPROM		2.2	5C/33	Site 40/48	
27C64A	32	PLCC	EPROM		2.5	5C/C1	ChipSite	32 PIN PLCC MB
27C64A	32	PLCC	EPROM		3.0	5C/C1	PinSite	
27HC641	24	DIP	EPROM		2.8	87/67	SetSite	
27HC641	24	DIP	EPROM		2.8	87/67	Site 40/48	
27HC641	28	PLCC	EPROM		2.8	87/9A	ChipSite	28 PIN PLCC MB
27HC641	28	PLCC	EPROM		3.0	87/9A	PinSite	
5000	68	PLCC	EPLD		3.6	131/0F5	PinSite	
750	24	DIP	EPLD		3.6	65/0F	Site 40/48	
750	28	PLCC	EPLD		3.6	065/70F	ChipSite	28 PIN PLCC MB
750	28	PLCC	EPLD		3.6	065/70F	PinSite	
82123	16	DIP	PROM		1.4	10/02	Site 40/48	
82HS187	24	DIP	PROM	1	2.2	CE/5C	Site 40/48	
82HS187	28	PLCC	PROM	1	3.0	0CE/168	ChipSite	28 PIN PLCC MB
82HS187	28	PLCC	PROM	1	3.0	0CE/168	PinSite	
82HS189	24	DIP	PROM	1	2.2	CE/5C	Site 40/48	
82HS189	28	PLCC	PROM	1	3.0	0CE/168	ChipSite	
82HS189	28	PLCC	PROM	1	3.0	0CE/168	PinSite	28 PIN PLCC MB
82HS191	24	DIP	PROM		2.4	CE/21	Site 40/48	
82HS191	28	PLCC	PROM		2.4	CE/8B	ChipSite	
82HS191	28	PLCC	PROM		3.0	CE/8B	PinSite	28 PIN PLCC MB
82HS195	20	DIP	PROM		2.2	CF/53	Site 40/48	
82HS195	20	PLCC	PROM		2.2	CE/8C	ChipSite	
82HS195	20	PLCC	PROM		3.0	CE/8C	PinSite	
82HS321	24	DIP	PROM		2.2	CF/63	Site 40/48	28 PIN PLCC MB
82HS321	28	PLCC	PROM		2.4	CF/8E	ChipSite	
82HS321	28	PLCC	PROM		3.0	CF/8E	PinSite	
82HS641	24	DIP	PROM		2.2	CE/67	Site 40/48	
82HS641	28	LCC	PROM		3.9	CE/9A	ChipSite	28 PIN LCC MB
82HS641	28	LCC	PROM		3.9	CE/9A	PinSite	
82HS641	28	PLCC	PROM		2.2	CE/9A	ChipSite	
82HS641	28	PLCC	PROM		3.0	CE/9A	PinSite	
82LS135	20	DIP	PROM		1.4	10/08	Site 40/48	20 PIN PLCC MB
82LS135	20	PLCC	PROM		3.0	10/7B	ChipSite	
82LS135	20	PLCC	PROM		3.0	10/7B	PinSite	
82LS180	24	DIP	PROM		1.4	10/16	Site 40/48	
82LS181	24	DIP	PROM		1.4	10/16	Site 40/48	28 PIN PLCC MB
82S100	28	DIP	FPLA		3.6	96/61	Site 40/48	
82S100	28	PLCC	FPLA		3.6	096/761	ChipSite	
82S100	28	PLCC	FPLA		3.6	096/761	PinSite	
82S101	28	DIP	FPLA		3.6	96/61	Site 40/48	28 PIN PLCC MB
82S101	28	PLCC	FPLA		3.6	096/761	ChipSite	
82S101	28	PLCC	FPLA		3.6	096/761	PinSite	
82S105	28	DIP	FPLA		3.6	96/63	Site 40/48	
82S105	28	PLCC	FPLA		3.6	096/763	ChipSite	28 PIN PLCC MB
82S105	28	PLCC	FPLA		3.6	096/763	PinSite	
82S115	24	DIP	PROM		1.1	AE/83	Site 40/48	
82S123	16	DIP	PROM		1.4	10/02	Site 40/48	
82S123	16	SO	PROM		1.6	010/802	ChipSite	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Signetics Corporation (continued)</b>								
82S123	16	SO	PROM		3.0	010/802	PinSite	SOIC_30
82S123	20	PLCC	PROM		1.6	010/702	ChipSite	
82S123	20	PLCC	PROM		3.0	010/702	PinSite	20 PIN PLCC MB
82S126	16	DIP	PROM		1.7	10/01	Site 40/48	
82S126	16	SO	PROM		3.0	010/801	ChipSite	
82S126	16	SO	PROM		3.0	010/801	PinSite	SOIC_30
82S126	20	PLCC	PROM		3.0	10/6B	ChipSite	
82S126	20	PLCC	PROM		3.0	10/6B	PinSite	20 PIN PLCC MB
82S129	16	DIP	PROM		1.7	10/01	Site 40/48	
82S129	16	SO	PROM		3.0	010/801	ChipSite	
82S129	16	SO	PROM		3.0	010/801	PinSite	SOIC_30
82S129	20	PLCC	PROM		2.5	10/6B	ChipSite	
82S129	20	PLCC	PROM		3.0	10/6B	PinSite	20 PIN PLCC MB
82S130	16	DIP	PROM		1.7	10/03	Site 40/48	
82S130	16	SO	PROM		2.8	010/803	ChipSite	
82S130	16	SO	PROM		3.0	010/803	PinSite	SOIC_30
82S130	20	PLCC	PROM		2.4	10/6D	ChipSite	
82S130	20	PLCC	PROM		3.0	10/6D	PinSite	20 PIN PLCC MB
82S131	16	DIP	PROM		1.7	10/03	Site 40/48	
82S131	16	SO	PROM		2.8	010/803	ChipSite	
82S131	16	SO	PROM		3.0	010/803	PinSite	SOIC_30
82S131	20	PLCC	PROM		2.4	10/6D	ChipSite	
82S131	20	PLCC	PROM		3.0	10/6D	PinSite	20 PIN PLCC MB
82S135	20	DIP	PROM		1.4	10/08	Site 40/48	
82S136	18	DIP	PROM		1.4	10/05	Site 40/48	
82S137	18	DIP	PROM		1.4	10/05	Site 40/48	
82S137	20	PLCC	PROM		3.0	10/6E	ChipSite	
82S137	20	PLCC	PROM		3.0	10/6E	PinSite	20 PIN PLCC MB
82S140	24	DIP	PROM		1.4	10/15	Site 40/48	
82S141	24	DIP	PROM		1.4	10/15	Site 40/48	
82S141	28	PLCC	PROM		2.4	10/7F	ChipSite	
82S141	28	PLCC	PROM		3.0	10/7F	PinSite	28 PIN PLCC MB
82S146	20	DIP	PROM		1.4	10/09	Site 40/48	
82S147	20	DIP	PROM		1.4	10/09	Site 40/48	
82S147	20	PLCC	PROM		2.4	10/7C	ChipSite	
82S147	20	PLCC	PROM		3.0	10/7C	PinSite	20 PIN PLCC MB
82S153	20	DIP	FPLA		3.6	96/65	Site 40/48	
82S153	20	PLCC	FPLA		3.6	096/765	ChipSite	
82S153	20	PLCC	FPLA		3.6	096/765	PinSite	20 PIN PLCC MB
82S180	24	DIP	PROM		1.4	10/16	Site 40/48	
82S181	24	DIP	PROM		1.4	10/16	Site 40/48	
82S181	28	PLCC	PROM		2.4	10/8A	ChipSite	
82S181	28	PLCC	PROM		3.0	10/8A	PinSite	28 PIN PLCC MB
82S182	24	DIP	PROM		1.4	10/16	Site 40/48	
82S183	24	DIP	PROM		1.4	10/16	Site 40/48	
82S183	28	PLCC	PROM		2.5	10/8A	ChipSite	
82S183	28	PLCC	PROM		3.0	10/8A	PinSite	28 PIN PLCC MB
82S184	18	DIP	PROM		1.4	10/06	Site 40/48	
82S185	18	DIP	PROM		1.4	10/06	Site 40/48	
82S185	20	PLCC	PROM		3.0	10/6F	ChipSite	
82S185	20	PLCC	PROM		3.0	10/6F	PinSite	20 PIN PLCC MB
82S190	24	DIP	PROM		1.4	10/21	Site 40/48	
82S191	24	DIP	PROM		1.4	10/21	Site 40/48	
82S191	28	PLCC	PROM		2.4	10/8B	ChipSite	
82S191	28	PLCC	PROM		3.0	10/8B	PinSite	28 PIN PLCC MB
82S23	16	DIP	PROM		1.6	10/02	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Signetics Corporation (continued)</b>								
82S23	16	SO	PROM		1.4	010/802	ChipSite	
82S23	16	SO	PROM		3.0	010/802	PinSite	SOIC_30
82S23	20	PLCC	PROM		1.6	010/702	ChipSite	
82S23	20	PLCC	PROM		3.0	010/702	PinSite	20 PIN PLCC MB
82S2708	24	DIP	PROM		1.4	10/16	Site 40/48	
82US123	16	DIP	PROM		2.6	0E/02	Site 40/48	
82US123	20	PLCC	PROM		2.6	0E/6C	ChipSite	
82US123	20	PLCC	PROM		3.0	0E/6C	PinSite	20 PIN PLCC MB
82US23	16	DIP	PROM		2.8	0E/02	Site 40/48	
82US23	16	SO	PROM		3.0	00E/802	ChipSite	
82US23	16	SO	PROM		3.0	00E/802	PinSite	SOIC_30
82US23	20	PLCC	PROM		2.6	0E/6C	ChipSite	
82US23	20	PLCC	PROM		3.0	0E/6C	PinSite	20 PIN PLCC MB
87C451	68	JLCC	MICRO	2	2.8	05A/147	ChipSite	
87C451	68	JLCC	MICRO	2	3.0	05A/147	PinSite	68 PIN PLCC MB
87C451	68	PLCC	MICRO	2	2.8	05A/147	ChipSite	
87C451	68	PLCC	MICRO	2	3.0	05A/147	PinSite	68 PIN PLCC MB
87C51	40	DIP	MICRO	2	3.8	5A/0B	Site 40/48	
87C51	44	JLCC	MICRO	2	3.8	05A/074	ChipSite	
87C51	44	JLCC	MICRO	2	3.8	05A/074	PinSite	44 PIN PLCC MB
87C51	44	LCC	MICRO	2	3.8	05A/074	PinSite	44 PIN LCC MB
87C51	44	LCC	MICRO	2,44	3.8	05A/074	ChipSite	
87C51	44	PLCC	MICRO	2	3.8	05A/074	ChipSite	
87C51	44	PLCC	MICRO	2	3.8	05A/074	PinSite	44 PIN PLCC MB
87C51FB	40	DIP	MICRO	2	3.8	5A/73	Site 40/48	
87C52	40	DIP	MICRO		3.1	05A/187	Site 40/48	
87C52	44	JLCC	MICRO		3.1	05A/143	ChipSite	
87C52	44	JLCC	MICRO		3.1	05A/143	PinSite	44 PIN PLCC MB
87C524	40	DIP	MICRO		3.8	05A/20D	Site 40/48	
87C524	44	PLCC	MICRO		3.9	05A/20E	ChipSite	
87C524	44	PLCC	MICRO		3.9	05A/20E	PinSite	44 PIN PLCC MB
87C528	40	DIP	MICRO	2	3.7	20F/209	Site 40/48	
87C528	44	JLCC	MICRO	2	3.9	20F/20A	ChipSite	
87C528	44	JLCC	MICRO	2	3.9	20F/20A	PinSite	44 PIN PLCC MB
87C528	44	LCC	MICRO	2	3.7	20F/20A	ChipSite	
87C528	44	LCC	MICRO	2	3.7	20F/20A	PinSite	44 PIN LCC MB
87C528	44	PLCC	MICRO	2	3.9	20F/20A	ChipSite	
87C528	44	PLCC	MICRO	2	3.9	20F/20A	PinSite	44 PIN PLCC MB
87C550(COM)	40	DIP	MICRO		3.9	05A/54E	Site 40/48	
87C550(COM)	44	JLCC	MICRO		2.8	05A/14E	ChipSite	
87C550(COM)	44	JLCC	MICRO		3.0	05A/14E	PinSite	44 PIN PLCC MB
87C552	68	JLCC	MICRO	2	3.1	05A/148	ChipSite	
87C552	68	JLCC	MICRO	2	3.1	05A/148	PinSite	68 PIN PLCC MB
87C575	40	DIP	MICRO	2	3.9	45A/04F	Site 40/48	
87C592	68	JLCC	MICRO	2	3.8	05A/85F	ChipSite	
87C592	68	JLCC	MICRO	2	3.8	05A/85F	PinSite	68 PIN PLCC MB
87C592	68	LCC	MICRO	2	3.8	05A/85F	ChipSite	
87C592	68	LCC	MICRO	2	3.8	05A/85F	PinSite	68 PIN LCC MB
87C592	68	PLCC	MICRO	2	3.8	05A/85F	ChipSite	
87C592	68	PLCC	MICRO	2	3.8	05A/85F	PinSite	68 PIN PLCC MB
87C652	40	DIP	MICRO	2	3.7	05A/20B	Site 40/48	
87C652	44	LCC	MICRO	2	3.7	05A/20C	ChipSite	
87C652	44	LCC	MICRO	2	3.7	05A/20C	PinSite	44 PIN LCC MB
87C654	40	DIP	MICRO	2	3.7	05A/20D	Site 40/48	
87C654	44	PLCC	MICRO	2	3.7	05A/20E	ChipSite	
87C654	44	PLCC	MICRO	2	3.7	05A/20E	PinSite	44 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Signetics Corporation (continued)</b>								
87C751	24	DIP	MICRO	29	2.3	119/111	Site 40/48	28 PIN PLCC MB
87C751	28	PLCC	MICRO	29	2.6	119/131	ChipSite	
87C751	28	PLCC	MICRO	29	3.0	119/131	PinSite	
87C752	28	DIP	MICRO	29	2.6	119/12F	Site 40/48	
87C752	28	PLCC	MICRO	29	2.8	119/15B	ChipSite	
87C752	28	PLCC	MICRO	29	3.0	119/15B	PinSite	28 PIN PLCC MB
CK2605	20	DIP	FPLA		3.7	96/71	Site 40/48	20 PIN PLCC MB
PHD16N8	20	DIP	PHD		3.0	1B/8F	Site 40/48	
PHD16N8	20	PLCC	PHD		3.0	01B/78F	ChipSite	
PHD16N8	20	PLCC	PHD		3.0	01B/78F	PinSite	
PHD48N22	68	PLCC	PHD	42	3.0	96/B2	Site 40/48	
PHD48N22	68	PLCC	PHD		3.0	96/B3	PinSite	68 PIN PLCC MB
PL22V10	24	DIP	PAL	33	3.6	A6/28	Site 40/48	28 PIN PLCC MB
PL22V10	28	PLCC	PAL	33	3.6	0A6/728	ChipSite	
PL22V10	28	PLCC	PAL	33	3.6	0A6/728	PinSite	
PLC153	20	DIP	FPLA		2.1	86/65	Site 40/48	
PLC153	20	PLCC	FPLA		2.4	086/765	ChipSite	
PLC153	20	PLCC	FPLA		3.0	086/765	PinSite	20 PIN PLCC MB
PLC16V8	20	DIP	PAL		2.1	86/3B	Site 40/48	20 PIN PLCC MB
PLC16V8	20	PLCC	PAL		2.4	086/73B	ChipSite	
PLC16V8	20	PLCC	PAL		3.0	086/73B	PinSite	
PLC18V8Z	20	DIP	PAL		2.6	86/4F	Site 40/48	
PLC18V8Z	20	PLCC	PAL		2.8	086/74F	ChipSite	
PLC18V8Z	20	PLCC	PAL		3.0	086/74F	PinSite	20 PIN PLCC MB
PLC20V8	24	DIP	PAL		2.1	86/4E	Site 40/48	28 PIN PLCC MB
PLC20V8	28	PLCC	PAL		2.4	086/74E	ChipSite	
PLC20V8	28	PLCC	PAL		3.0	086/74E	PinSite	
PLC415	28	DIP	FPLS		2.6	86/AA	Site 40/48	
PLC415	28	PLCC	FPLS		2.7	086/7AA	ChipSite	
PLC415	28	PLCC	FPLS		3.0	086/7AA	PinSite	28 PIN PLCC MB
PLC42VA12	24	DIP	FPLS	33	3.5	86/8A	Site 40/48	28 PIN PLCC MB
PLC42VA12	28	PLCC	FPLS	33	3.5	086/78A	ChipSite	
PLC42VA12	28	PLCC	FPLS	33	3.5	086/78A	PinSite	
PLC473	24	DIP	FPLS		2.1	86/78	Site 40/48	
PLC473	28	PLCC	FPLS		2.4	086/778	ChipSite	
PLC473	28	PLCC	FPLS		3.0	086/778	PinSite	28 PIN PLCC MB
PLHS153	20	DIP	FPLA		2.1	1A/65	Site 40/48	20 PIN PLCC MB
PLHS153	20	PLCC	FPLA		2.5	01A/765	ChipSite	
PLHS153	20	PLCC	FPLA		3.0	01A/765	PinSite	
PLHS16L8	20	DIP	PAL		2.1	1A/17	Site 40/48	
PLHS16L8	20	PLCC	PAL		2.5	01A/717	ChipSite	
PLHS16L8	20	PLCC	PAL		3.0	01A/717	PinSite	20 PIN PLCC MB
PLHS18P8	20	DIP	PAL		2.1	1A/33	Site 40/48	20 PIN PLCC MB
PLHS18P8	20	PLCC	PAL		2.1	01A/733	ChipSite	
PLHS18P8	20	PLCC	PAL		3.0	01A/733	PinSite	
PLHS473	24	DIP	FPLA		2.2	1A/78	Site 40/48	
PLHS473	28	PLCC	FPLA		2.2	01A/778	ChipSite	
PLHS473	28	PLCC	FPLA		3.0	01A/778	PinSite	28 PIN PLCC MB
PLHS501	52	PLCC	PML		1.7	01C/707	ChipSite	52 PIN PLCC MB
PLHS501	52	PLCC	PML		3.0	01C/707	PinSite	
PLHS502	68	PLCC	PML	41	2.8	1C/5E	Site 40/48	
PLHS502	68	PLCC	PML		3.2	1C/5F	PinSite	
PLHS601	68	PLCC	PLHS	41	3.1	1C/BB	Site 40/48	
PLHS601	68	PLCC	PLHS		3.1	1C/BC	PinSite	68 PIN PLCC MB
PLS100	28	DIP	FPLA		2.5	96/61	Site 40/48	68 PIN PLCC MB
PLS100	28	PLCC	FPLA		2.5	096/761	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Signetics Corporation (continued)</b>								
PLS100	28	PLCC	FPLA		3.0	096/761	PinSite	28 PIN PLCC MB
PLS101	28	DIP	FPLA		2.5	96/61	Site 40/48	
PLS101	28	PLCC	FPLA		2.5	096/761	ChipSite	
PLS101	28	PLCC	FPLA		3.0	096/761	PinSite	28 PIN PLCC MB
PLS102	28	DIP	FPGA		1.5	96/62	Site 40/48	
PLS103	28	DIP	FPGA		1.5	96/62	Site 40/48	
PLS103	28	PLCC	FPGA		2.6	096/762	ChipSite	
PLS103	28	PLCC	FPGA		3.0	096/762	PinSite	28 PIN PLCC MB
PLS105	28	DIP	FPLS		1.5	96/63	Site 40/48	
PLS105	28	PLCC	FPLS		1.5	096/763	ChipSite	
PLS105	28	PLCC	FPLS		3.0	096/763	PinSite	28 PIN PLCC MB
PLS151	20	DIP	FPGA		2.8	96/64	Site 40/48	
PLS151	20	PLCC	FPGA		2.8	096/764	ChipSite	
PLS151	20	PLCC	FPGA		3.0	096/764	PinSite	20 PIN PLCC MB
PLS152	20	DIP	FPLA		2.8	96/65	Site 40/48	
PLS152	20	PLCC	FPLA		2.8	096/765	ChipSite	
PLS152	20	PLCC	FPLA		3.0	096/765	PinSite	20 PIN PLCC MB
PLS153	20	DIP	FPLA		2.8	96/65	Site 40/48	
PLS153	20	PLCC	FPLA		2.8	096/765	ChipSite	
PLS153	20	PLCC	FPLA		3.0	096/765	PinSite	20 PIN PLCC MB
PLS155	20	DIP	FPLS		1.5	96/67	Site 40/48	
PLS155	20	PLCC	FPLS		1.5	096/767	ChipSite	
PLS155	20	PLCC	FPLS		3.0	096/767	PinSite	20 PIN PLCC MB
PLS157	20	DIP	FPLS		1.5	96/68	Site 40/48	
PLS157	20	PLCC	FPLS		1.5	096/768	ChipSite	
PLS157	20	PLCC	FPLS		3.0	096/768	PinSite	20 PIN PLCC MB
PLS159	20	DIP	FPLS		1.5	96/66	Site 40/48	
PLS159	20	PLCC	FPLS		1.5	096/766	ChipSite	
PLS159	20	PLCC	FPLS		3.0	096/766	PinSite	20 PIN PLCC MB
PLS159A	20	DIP	FPLS		2.8	64/66	Site 40/48	
PLS159A	20	PLCC	FPLS		2.4	064/766	ChipSite	
PLS159A	20	PLCC	FPLS		3.0	064/766	PinSite	20 PIN PLCC MB
PLS161	24	DIP	FPLA		2.5	96/69	Site 40/48	
PLS162	24	DIP	FPLA		1.5	96/73	Site 40/48	
PLS163	24	DIP	FPLA		1.5	96/75	Site 40/48	
PLS167	24	DIP	FPLS		1.5	96/60	Site 40/48	
PLS167	28	PLCC	FPLS		1.5	096/760	ChipSite	
PLS167	28	PLCC	FPLS		3.0	096/760	PinSite	28 PIN PLCC MB
PLS168	24	DIP	FPLS		1.5	96/74	Site 40/48	
PLS168	28	PLCC	FPLS		1.5	096/774	ChipSite	
PLS168	28	PLCC	FPLS		3.0	096/774	PinSite	28 PIN PLCC MB
PLS173	24	DIP	FPLA		2.8	96/76	Site 40/48	
PLS173	28	PLCC	FPLA		2.8	096/776	ChipSite	
PLS173	28	PLCC	FPLA		3.0	096/776	PinSite	28 PIN PLCC MB
PLS179	24	DIP	FPLS		2.8	96/77	Site 40/48	
PLS179	28	PLCC	FPLS		2.8	096/777	ChipSite	
PLS179	28	PLCC	FPLS		3.0	096/777	PinSite	28 PIN PLCC MB
PLUS105	28	DIP	FPLS		3.5	1B/63	Site 40/48	
PLUS105	28	PLCC	FPLS		3.5	01B/763	ChipSite	
PLUS105	28	PLCC	FPLS		3.5	01B/763	PinSite	28 PIN PLCC MB
PLUS153	20	DIP	FPLA		3.6	1B/65	Site 40/48	
PLUS153	20	PLCC	FPLA		3.6	01B/765	ChipSite	
PLUS153	20	PLCC	FPLA		3.6	01B/765	PinSite	20 PIN PLCC MB
PLUS16L8	20	DIP	PAL		3.8	211/017	Site 40/48	
PLUS16L8	20	PLCC	PAL		3.8	221/717	ChipSite	
PLUS16L8	20	PLCC	PAL		3.8	221/717	PinSite	20 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Signetics Corporation (continued)</b>								
PLUS16R4	20	DIP	PAL		3.8	221/024	Site 40/48	
PLUS16R4	20	PLCC	PAL		3.8	221/724	ChipSite	
PLUS16R4	20	PLCC	PAL		3.8	221/724	PinSite	20 PIN PLCC MB
PLUS16R6	20	DIP	PAL		3.8	221/024	Site 40/48	
PLUS16R6	20	PLCC	PAL		3.8	221/724	ChipSite	
PLUS16R6	20	PLCC	PAL		3.8	221/724	PinSite	20 PIN PLCC MB
PLUS16R8	20	DIP	PAL		3.8	221/024	Site 40/48	
PLUS16R8	20	PLCC	PAL		3.8	221/724	ChipSite	
PLUS16R8	20	PLCC	PAL		3.8	221/724	PinSite	20 PIN PLCC MB
PLUS173	24	DIP	FPLA		3.6	1B/76	Site 40/48	
PLUS173	28	PLCC	FPLA		3.0	01B/776	PinSite	28 PIN PLCC MB
PLUS173	28	PLCC	FPLA		3.6	01B/776	ChipSite	
PLUS20L8	24	DIP	PAL		2.3	1B/26	Site 40/48	
PLUS20L8	28	PLCC	PAL		2.5	01B/626	ChipSite	
PLUS20L8	28	PLCC	PAL		3.0	01B/626	PinSite	28 PIN PLCC MB
PLUS20R4	24	DIP	PAL		2.3	1B/27	Site 40/48	
PLUS20R4	28	PLCC	PAL		2.5	01B/627	ChipSite	
PLUS20R4	28	PLCC	PAL		3.0	01B/627	PinSite	28 PIN PLCC MB
PLUS20R6	24	DIP	PAL		2.3	1B/27	Site 40/48	
PLUS20R6	28	PLCC	PAL		2.5	01B/627	ChipSite	
PLUS20R6	28	PLCC	PAL		3.0	01B/627	PinSite	28 PIN PLCC MB
PLUS20R8	24	DIP	PAL		2.3	1B/27	Site 40/48	
PLUS20R8	28	PLCC	PAL		2.5	01B/627	ChipSite	
PLUS20R8	28	PLCC	PAL		3.0	01B/627	PinSite	28 PIN PLCC MB
PLUS405	28	DIP	FPLS		3.5	1B/79	Site 40/48	
PLUS405	28	PLCC	FPLS		3.5	01B/779	ChipSite	
PLUS405	28	PLCC	FPLS		3.5	01B/779	PinSite	28 PIN PLCC MB
PML2552	68	JLCC	PML	42	3.2	159/08D	PinSite	68 PIN PLCC MB
PML2552	68	PLCC	PML		2.8	159/08C	Site 40/48	
PML2552	68	PLCC	PML		3.0	159/08D	PinSite	68 PIN PLCC MB
PML2852	84	JLCC	PML	128	3.8	159/18C	Site 40/48	
PML2852	84	JLCC	PML		3.5	159/18D	PinSite	84 PIN PLCC MB
PML2852	84	PLCC	PML	128	3.8	159/18C	Site 40/48	
PML2852	84	PLCC	PML		3.5	159/18D	PinSite	84 PIN PLCC MB

**Simtek Corporation**

10C68	28	DIP	NOVRAM		3.5	1BB/033	Site 40/48	
11C68	28	DIP	NOVRAM		3.5	1BC/1D1	Site 40/48	
11C68	28	LCC	NOVRAM		3.9	1BC/1D1	Site 40/48	

**Sony Corporation**

27C1000	32	DIP	EPROM		3.0	5C/CC	SetSite	
27C1000	32	DIP	EPROM		3.0	5C/CC	Site 40/48	
27C1001	32	DIP	EPROM		3.0	5C/CB	SetSite	
27C1001	32	DIP	EPROM		3.0	5C/CB	Site 40/48	
27C2001	32	DIP	EPROM		3.9	5C/F5	Site 40/48	
27C256	28	DIP	EPROM		3.0	5C/32	SetSite	
27C256	28	DIP	EPROM		3.0	5C/32	Site 40/48	
27C4001	32	DIP	EPROM		3.9	5C/F6	Site 40/48	
27C4002	40	DIP	EPROM		3.9	5F/89	Site 40/48	
27C512	28	DIP	EPROM		3.0	144/0A4	SetSite	
27C512	28	DIP	EPROM		3.0	144/0A4	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments</b>								
1010A	68	PLCC	FPGA	39	3.2	12C/08E	PinSite	68 PIN PLCC MB
1010A	68	PLCC	FPGA	39	3.4	12C/8AB	USM-340-001	
1010A	84	PGA	FPGA	39	3.4	12C/8AC	PinSite	
1020A	68	PLCC	FPGA	39	3.4	146/08E	PinSite	68 PIN PLCC MB
1020A	68	PLCC	FPGA	39	3.4	146/8AB	USM-340-001	
1020A	84	PLCC	FPGA	39	3.4	146/7AC	PinSite	84 PIN PLCC MB
10H16ET6	24	DIP	EPAL	34	2.7	99/A6	Site 48	
10H16P8-3	24	DIP	EPAL		2.6	99/A5	Site 40/48	28 PIN PLCC MB
10H16P8-3	28	PLCC	EPAL		2.6	099/7A5	ChipSite	
10H16P8-3	28	PLCC	EPAL		3.0	099/7A5	PinSite	
10H16P8-6	24	DIP	EPAL	19,34	2.2	99/92	Site 40/48	28 PIN PLCC MB
10H16P8-6	28	PLCC	EPAL	34	2.2	099/792	ChipSite	
10H16P8-6	28	PLCC	EPAL	34	3.0	099/792	PinSite	
1602	20	DIP	BPAL		3.4	1B2/017	Site 40/48	20 PIN PLCC MB
1602	20	PLCC	BPAL		3.4	1B2/717	ChipSite	
1602	20	PLCC	BPAL		3.4	1B2/717	PinSite	20 PIN PLCC MB
16L8-10	20	DIP	BPAL		2.3	A1/17	Site 40/48	
16L8-10	20	PLCC	BPAL		2.3	0A1/717	ChipSite	20 PIN PLCC MB
16L8-10	20	PLCC	BPAL		3.0	0A1/717	PinSite	
16L8-12/15/25	20	DIP	BPAL		1.7	9A/17	Site 40/48	20 PIN PLCC MB
16L8-12/15/25	20	PLCC	BPAL		1.7	09A/717	ChipSite	
16L8-12/15/25	20	PLCC	BPAL		3.0	09A/717	PinSite	
16L8-12/15/25	20	SO	BPAL		1.7	09A/817	ChipSite	SOIC_30
16L8-12/15/25	20	SO	BPAL		3.0	09A/817	PinSite	
16L8-5	20	DIP	BPAL		3.8	AD/17	Site 40/48	
16L8-5	20	LCC	BPAL	44	3.8	0AD/717	ChipSite	20 PIN LCC MB
16L8-5	20	LCC	BPAL		3.8	0AD/717	PinSite	
16L8-5	20	PLCC	BPAL		3.8	0AD/717	ChipSite	20 PIN PLCC MB
16L8-5	20	PLCC	BPAL		3.8	0AD/717	PinSite	
16L8-7	20	DIP	BPAL		3.8	0B/17	Site 40/48	20 PIN PLCC MB
16L8-7	20	PLCC	BPAL		3.8	00B/717	ChipSite	
16L8-7	20	PLCC	BPAL		3.8	00B/717	PinSite	20 PIN PLCC MB
16L8A/A-2	20	DIP	PAL		1.7	99/17	Site 40/48	
16L8A/A-2	20	LCC	PAL		1.7	099/717	ChipSite	20 PIN LCC MB
16L8A/A-2	20	LCC	PAL		3.0	099/717	PinSite	
16N8	20	DIP	BPAD		2.1	A1/0A	Site 40/48	20 PIN PLCC MB
16N8	20	PLCC	BPAD		2.3	0A1/70A	ChipSite	
16N8	20	PLCC	BPAD		3.0	0A1/70A	PinSite	
16R4-10	20	DIP	BPAL		2.3	A1/24	Site 40/48	20 PIN PLCC MB
16R4-10	20	PLCC	BPAL		2.3	0A1/724	ChipSite	
16R4-10	20	PLCC	BPAL		3.0	0A1/724	PinSite	20 PIN PLCC MB
16R4-12/15/25	20	DIP	BPAL		1.7	9A/24	Site 40/48	
16R4-12/15/25	20	PLCC	BPAL		1.7	09A/724	ChipSite	20 PIN PLCC MB
16R4-12/15/25	20	PLCC	BPAL		3.0	09A/724	PinSite	
16R4-12/15/25	20	SO	BPAL		1.7	09A/824	ChipSite	SOIC_30
16R4-12/15/25	20	SO	BPAL		3.0	09A/824	PinSite	
16R4-5	20	DIP	BPAL		3.8	AD/24	Site 40/48	20 PIN LCC MB
16R4-5	20	LCC	BPAL	44	3.8	0AD/724	ChipSite	
16R4-5	20	LCC	BPAL		3.8	0AD/724	PinSite	20 PIN LCC MB
16R4-5	20	PLCC	BPAL		3.8	0AD/724	ChipSite	
16R4-5	20	PLCC	BPAL		3.8	0AD/724	PinSite	20 PIN PLCC MB
16R4-7	20	DIP	BPAL		3.8	0B/24	Site 40/48	
16R4-7	20	PLCC	BPAL		3.8	00B/724	ChipSite	20 PIN PLCC MB
16R4-7	20	PLCC	BPAL		3.8	00B/724	PinSite	
16R4A/A-2	20	DIP	PAL		1.7	99/24	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
16R4A/A-2	20	LCC	PAL		1.7	099/724	ChipSite	
16R4A/A-2	20	LCC	PAL		3.0	099/724	PinSite	20 PIN LCC MB
16R6-10	20	DIP	BPAL		2.3	A1/24	Site 40/48	
16R6-10	20	PLCC	BPAL		2.3	0A1/724	ChipSite	
16R6-10	20	PLCC	BPAL		3.0	0A1/724	PinSite	20 PIN PLCC MB
16R6-12/15/25	20	DIP	BPAL		1.7	9A/24	Site 40/48	
16R6-12/15/25	20	PLCC	BPAL		1.7	09A/724	ChipSite	
16R6-12/15/25	20	PLCC	BPAL		3.0	09A/724	PinSite	20 PIN PLCC MB
16R6-12/15/25	20	SO	BPAL		1.7	09A/824	ChipSite	
16R6-12/15/25	20	SO	BPAL		3.0	09A/824	PinSite	SOIC_30
16R6-5	20	DIP	BPAL		3.8	AD/24	Site 40/48	
16R6-5	20	LCC	BPAL	44	3.8	0AD/724	ChipSite	
16R6-5	20	LCC	BPAL		3.8	0AD/724	PinSite	20 PIN LCC MB
16R6-5	20	PLCC	BPAL		3.1	0AD/724	ChipSite	
16R6-5	20	PLCC	BPAL		3.1	0AD/724	PinSite	20 PIN PLCC MB
16R6-7	20	DIP	BPAL		3.8	0B/24	Site 40/48	
16R6-7	20	PLCC	BPAL		3.8	00B/724	ChipSite	
16R6-7	20	PLCC	BPAL		3.8	00B/724	PinSite	20 PIN PLCC MB
16R6A/A-2	20	DIP	PAL		1.7	99/24	Site 40/48	
16R6A/A-2	20	LCC	PAL		1.7	099/724	ChipSite	
16R6A/A-2	20	LCC	PAL		3.0	099/724	PinSite	20 PIN LCC MB
16R8-10	20	DIP	BPAL		2.3	A1/24	Site 40/48	
16R8-10	20	PLCC	BPAL		2.3	0A1/724	ChipSite	
16R8-10	20	PLCC	BPAL		3.0	0A1/724	PinSite	20 PIN PLCC MB
16R8-12/15/25	20	DIP	BPAL		1.7	9A/24	Site 40/48	
16R8-12/15/25	20	PLCC	BPAL		1.7	09A/724	ChipSite	
16R8-12/15/25	20	PLCC	BPAL		3.0	09A/724	PinSite	20 PIN PLCC MB
16R8-12/15/25	20	SO	BPAL		1.7	09A/824	ChipSite	
16R8-12/15/25	20	SO	BPAL		3.0	09A/824	PinSite	SOIC_30
16R8-5	20	DIP	BPAL		3.8	AD/24	Site 40/48	
16R8-5	20	LCC	BPAL	44	3.8	0AD/724	ChipSite	
16R8-5	20	LCC	BPAL		3.8	0AD/724	PinSite	20 PIN LCC MB
16R8-5	20	PLCC	BPAL		3.8	0AD/724	ChipSite	
16R8-5	20	PLCC	BPAL		3.8	0AD/724	PinSite	20 PIN PLCC MB
16R8-7	20	DIP	BPAL		3.8	0B/24	Site 40/48	
16R8-7	20	PLCC	BPAL		3.8	00B/724	ChipSite	
16R8-7	20	PLCC	BPAL		3.8	00B/724	PinSite	20 PIN PLCC MB
16R8A/A-2	20	DIP	PAL		1.7	99/24	Site 40/48	
16R8A/A-2	20	LCC	PAL		1.7	099/724	ChipSite	
16R8A/A-2	20	LCC	PAL		3.0	099/724	PinSite	20 PIN LCC MB
1810	68	JLCC	EPLD		3.2	026/79A	ChipSite	
1810	68	JLCC	EPLD		3.2	026/79A	PinSite	68 PIN PLCC MB
1810	68	PLCC	EPLD		2.7	026/79A	ChipSite	
1810	68	PLCC	EPLD		3.0	026/79A	PinSite	68 PIN PLCC MB
1830	68	JLCC	EPLD		3.6	2E/9A	ChipSite	
1830	68	JLCC	EPLD		3.6	2E/9A	PinSite	68 PIN PLCC MB
1830	68	PLCC	EPLD		3.6	2E/9A	ChipSite	
1830	68	PLCC	EPLD		3.6	2E/9A	PinSite	68 PIN PLCC MB
18N8	20	DIP	BPAD		2.3	A1/5E	Site 40/48	
18N8	20	PLCC	BPAD		2.3	0A1/75E	ChipSite	
18N8	20	PLCC	BPAD		3.0	0A1/75E	PinSite	20 PIN PLCC MB
18S030	16	DIP	PROM		2.2	04/02	Site 40/48	
18SA030	16	DIP	PROM		2.2	04/02	Site 40/48	
20L10	24	DIP	BPAL		3.0	99/06	Site 40/48	
20L10-FN	28	PLCC	BPAL		3.0	099/706	ChipSite	
20L10-FN	28	PLCC	BPAL		3.0	099/706	PinSite	28 PIN PLCC MB



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
20L10-NL	28	PLCC	BPAL		3.0	099/606	ChipSite	
20L10-NL	28	PLCC	BPAL		3.0	099/606	PinSite	28 PIN PLCC MB
20L8-10	24	DIP	BPAL		3.8	0B/26	Site 40/48	
20L8-10	28	PLCC	BPAL		3.8	00B/726	ChipSite	
20L8-10	28	PLCC	BPAL		3.8	00B/726	PinSite	28 PIN PLCC MB
20L8-15/-25	24	DIP	BPAL		2.3	A1/26	Site 40/48	
20L8-15/-25-FN	28	PLCC	BPAL		2.3	0A1/726	ChipSite	
20L8-15/-25-FN	28	PLCC	BPAL		3.0	0A1/726	PinSite	28 PIN PLCC MB
20L8-15/-25-NL	28	PLCC	BPAL		2.3	0A1/626	ChipSite	
20L8-15/-25-NL	28	PLCC	BPAL		3.0	0A1/626	PinSite	28 PIN PLCC MB
20L8-5	24	DIP	BPAL		3.8	AD/26	Site 40/48	
20L8-5	28	LCC	BPAL	44	3.8	0AD/726	ChipSite	
20L8-5	28	LCC	BPAL		3.8	0AD/726	PinSite	28 PIN LCC MB
20L8-5	28	PLCC	BPAL		3.8	0AD/726	ChipSite	
20L8-5	28	PLCC	BPAL		3.8	0AD/726	PinSite	28 PIN PLCC MB
20L8-7	24	DIP	BPAL		3.8	0B/26	Site 40/48	
20L8-7	28	PLCC	BPAL		3.8	00B/726	ChipSite	
20L8-7	28	PLCC	BPAL		3.8	00B/726	PinSite	28 PIN PLCC MB
20L8A	24	DIP	PAL		1.7	99/26	Site 40/48	
20L8A	28	PLCC	PAL		1.7	099/726	ChipSite	
20L8A	28	PLCC	PAL		3.0	099/726	PinSite	28 PIN PLCC MB
20R4-10	24	DIP	BPAL		3.8	0B/27	Site 40/48	
20R4-10	28	PLCC	BPAL		3.8	00B/727	ChipSite	
20R4-10	28	PLCC	BPAL		3.8	00B/727	PinSite	28 PIN PLCC MB
20R4-15/-25	24	DIP	BPAL		2.3	A1/27	Site 40/48	
20R4-15/-25-FN	28	PLCC	BPAL		2.3	0A1/727	ChipSite	
20R4-15/-25-FN	28	PLCC	BPAL		3.0	0A1/727	PinSite	28 PIN PLCC MB
20R4-15/-25-NL	28	PLCC	BPAL		2.3	0A1/627	ChipSite	
20R4-15/-25-NL	28	PLCC	BPAL		3.0	0A1/627	PinSite	28 PIN PLCC MB
20R4-5	24	DIP	BPAL		3.8	AD/27	Site 40/48	
20R4-5	28	LCC	BPAL	44	3.8	0AD/727	ChipSite	
20R4-5	28	LCC	BPAL		3.8	0AD/727	PinSite	28 PIN LCC MB
20R4-5	28	PLCC	BPAL		3.8	0AD/727	ChipSite	
20R4-5	28	PLCC	BPAL		3.8	0AD/727	PinSite	28 PIN PLCC MB
20R4-7	24	DIP	BPAL		3.8	0B/27	Site 40/48	
20R4-7	28	PLCC	BPAL		3.8	00B/727	ChipSite	
20R4-7	28	PLCC	BPAL		3.8	00B/727	PinSite	28 PIN PLCC MB
20R4A	24	DIP	PAL		1.7	99/27	Site 40/48	
20R4A	24	SO	PAL		1.7	099/827	ChipSite	
20R4A	24	SO	PAL		3.0	099/827	PinSite	SOIC_30
20R4A	28	PLCC	PAL		1.7	099/727	ChipSite	
20R4A	28	PLCC	PAL		3.0	099/727	PinSite	28 PIN PLCC MB
20R6-10	24	DIP	BPAL		3.8	0B/27	Site 40/48	
20R6-10	28	PLCC	BPAL		3.8	00B/727	ChipSite	
20R6-10	28	PLCC	BPAL		3.8	00B/727	PinSite	28 PIN PLCC MB
20R6-15/-25	24	DIP	BPAL		2.3	A1/27	Site 40/48	
20R6-15/-25-FN	28	PLCC	BPAL		2.3	0A1/727	ChipSite	
20R6-15/-25-FN	28	PLCC	BPAL		3.0	0A1/727	PinSite	28 PIN PLCC MB
20R6-15/-25-NL	28	PLCC	BPAL		2.3	0A1/627	ChipSite	
20R6-15/-25-NL	28	PLCC	BPAL		3.0	0A1/627	PinSite	28 PIN PLCC MB
20R6-5	24	DIP	BPAL		3.8	AD/27	Site 40/48	
20R6-5	28	LCC	BPAL	44	3.8	0AD/727	ChipSite	
20R6-5	28	LCC	BPAL		3.8	0AD/727	PinSite	28 PIN LCC MB
20R6-5	28	PLCC	BPAL		3.8	0AD/727	ChipSite	
20R6-5	28	PLCC	BPAL		3.8	0AD/727	PinSite	28 PIN PLCC MB
20R6-7	24	DIP	BPAL		3.8	0B/27	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
20R6-7	28	PLCC	BPAL		3.8	00B/727	ChipSite	28 PIN PLCC MB
20R6-7	28	PLCC	BPAL		3.8	00B/727	PinSite	
20R6A	24	DIP	PAL		1.7	99/27	Site 40/48	
20R6A	24	SO	PAL		1.7	099/827	ChipSite	
20R6A	24	SO	PAL		3.0	099/827	PinSite	
20R6A	28	PLCC	PAL		1.7	099/727	ChipSite	SOIC_30
20R6A	28	PLCC	PAL		3.0	099/727	PinSite	
20R8-10	24	DIP	BPAL		3.8	0B/27	Site 40/48	
20R8-10	28	PLCC	BPAL		3.8	00B/727	ChipSite	
20R8-10	28	PLCC	BPAL		3.8	00B/727	PinSite	
20R8-15/-25	24	DIP	BPAL		2.3	A1/27	Site 40/48	28 PIN PLCC MB
20R8-15/-25-FN	28	PLCC	BPAL		2.3	0A1/727	ChipSite	
20R8-15/-25-FN	28	PLCC	BPAL		3.0	0A1/727	PinSite	
20R8-15/-25-NL	28	PLCC	BPAL		2.3	0A1/627	ChipSite	
20R8-15/-25-NL	28	PLCC	BPAL		3.0	0A1/627	PinSite	
20R8-5	24	DIP	BPAL		3.8	AD/27	Site 40/48	28 PIN PLCC MB
20R8-5	28	LCC	BPAL	44	3.8	0AD/727	ChipSite	
20R8-5	28	LCC	BPAL		3.8	0AD/727	PinSite	
20R8-5	28	PLCC	BPAL		3.8	0AD/727	ChipSite	
20R8-5	28	PLCC	BPAL		3.8	0AD/727	PinSite	
20R8-7	24	DIP	BPAL		3.8	0B/27	Site 40/48	28 PIN PLCC MB
20R8-7	28	PLCC	BPAL		3.8	00B/727	ChipSite	
20R8-7	28	PLCC	BPAL		3.8	00B/727	PinSite	
20R8A	24	DIP	PAL		1.7	99/27	Site 40/48	
20R8A	24	SO	PAL		1.7	099/827	ChipSite	
20R8A	24	SO	PAL		3.0	099/827	PinSite	SOIC_30
20R8A	28	PLCC	PAL		1.7	099/727	ChipSite	
20R8A	28	PLCC	PAL		3.0	099/727	PinSite	
20X10	24	DIP	BPAL		3.0	99/23	Site 40/48	
20X10-FN	28	PLCC	BPAL		3.0	099/723	ChipSite	
20X10-FN	28	PLCC	BPAL		3.0	099/723	PinSite	28 PIN PLCC MB
20X10-NL	28	PLCC	BPAL		3.0	099/623	ChipSite	
20X10-NL	28	PLCC	BPAL		3.0	099/623	PinSite	
20X4	24	DIP	BPAL		3.0	99/23	Site 40/48	
20X4-FN	28	PLCC	BPAL		3.0	099/723	ChipSite	
20X4-FN	28	PLCC	BPAL		3.0	099/723	PinSite	28 PIN PLCC MB
20X4-NL	28	PLCC	BPAL		3.0	099/623	ChipSite	
20X4-NL	28	PLCC	BPAL		3.0	099/623	PinSite	
20X8	24	DIP	BPAL		3.0	99/23	Site 40/48	
20X8-FN	28	PLCC	BPAL		3.0	099/723	ChipSite	
20X8-FN	28	PLCC	BPAL		3.0	099/723	PinSite	28 PIN PLCC MB
20X8-NL	28	PLCC	BPAL		3.0	099/623	ChipSite	
20X8-NL	28	PLCC	BPAL		3.0	099/623	PinSite	
22V10-7	24	DIP	BPAL		3.7	99/28	Site 40/48	
22V10-7	28	PLCC	BPAL		3.7	099/728	ChipSite	
22V10-7	28	PLCC	BPAL		3.7	099/728	PinSite	28 PIN PLCC MB
22V10/A/B-15	24	DIP	BPAL		3.6	99/28	Site 40/48	
22V10/A/B-15-FN	28	PLCC	BPAL		3.6	099/728	ChipSite	
22V10/A/B-15-FN	28	PLCC	BPAL		3.6	099/728	PinSite	
22VP10	24	DIP	BPAL		3.6	99/98	Site 40/48	
22VP10-FN	28	PLCC	BPAL		3.6	099/798	ChipSite	28 PIN PLCC MB
22VP10-FN	28	PLCC	BPAL		3.6	099/798	PinSite	
24S10	16	DIP	PROM		1.0	13/01	Site 40/48	
24S41	18	DIP	PROM		1.0	13/38	Site 40/48	
24S81	18	DIP	PROM		1.0	13/06	Site 40/48	
24SA10	16	DIP	PROM		1.0	13/01	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
24SA41	18	DIP	PROM		1.0	13/38	Site 40/48	
24SA81	18	DIP	PROM		1.0	13/06	Site 40/48	
2508	24	DIP	EPROM		2.0	19/22	Site 40/48	
2508	24	DIP	EPROM		2.8	19/22	SetSite	
2516	24	DIP	EPROM		2.0	BD/23	SetSite	
2516	24	DIP	EPROM		2.0	BD/23	Site 40/48	
2532	24	DIP	EPROM		1.1	BD/25	Site 40/48	
2532	24	DIP	EPROM		2.0	BD/25	SetSite	
2532A	24	DIP	EPROM		1.5	63/25	Site 40/48	
2532A	24	DIP	EPROM		2.0	63/25	SetSite	
2564	28	DIP	EPROM		1.1	BD/30	Site 40/48	
2564	28	DIP	EPROM		2.0	BD/30	SetSite	
2708	24	DIP	EPROM		2.0	21/27	SetSite	
2708	24	DIP	EPROM		2.0	21/27	Site 40/48	
27128	28	DIP	EPROM		2.0	79/51	SetSite	
27128	28	DIP	EPROM		2.0	79/51	Site 40/48	
27128A	28	DIP	EPROM		2.1	93/51	SetSite	
27128A	28	DIP	EPROM		2.1	93/51	Site 40/48	
27256	28	DIP	EPROM		2.1	93/32	SetSite	
27256	28	DIP	EPROM		2.1	93/32	Site 40/48	
2732	24	DIP	EPROM		1.2	BD/24	Site 40/48	
2732	24	DIP	EPROM		2.0	BD/24	SetSite	
2732A-HS	24	DIP	EPROM		1.6	63/24	Site 40/48	
2732A-HS	24	DIP	EPROM		2.0	63/24	SetSite	
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
27C010	32	DIP	EPROM		2.5	12B/0CB	SetSite	
27C010	32	DIP	EPROM		2.5	12B/0CB	Site 40/48	
27C010A	32	DIP	EPROM		3.3	193/0CB	SetSite	
27C010A	32	DIP	EPROM		3.3	193/0CB	Site 40/48	
27C010A	32	PLCC	EPROM		3.6	193/1CB	ChipSite	
27C010A	32	PLCC	EPROM		3.6	193/1CB	PinSite	32 PIN PLCC MB
27C020	32	DIP	EPROM		3.9	141/0F5	SetSite	
27C020	32	DIP	EPROM		3.9	141/0F5	Site 40/48	
27C040	32	DIP	EPROM		3.4	93/F6	Site 40/48	
27C040	32	DIP	EPROM		3.6	93/F6	SetSite	
27C128	28	DIP	EPROM		2.2	115/051	SetSite	
27C128	28	DIP	EPROM		2.2	115/051	Site 40/48	
27C210	40	DIP	EPROM		2.7	73/A8	SetSite	
27C210	40	DIP	EPROM		2.7	73/A8	Site 40/48	
27C210A	40	DIP	EPROM		3.4	1A7/0A8	Site 40/48	
27C210A	40	DIP	EPROM		3.7	1A7/0A8	SetSite	
27C210A	44	PLCC	EPROM		3.6	1A7/1A8	ChipSite	
27C210A	44	PLCC	EPROM		3.6	1A7/1A8	PinSite	44 PIN PLCC MB
27C240	40	DIP	EPROM		3.6	115/207	Site 40/48	
27C240	40	DIP	EPROM		3.7	115/207	SetSite	
27C256	28	DIP	EPROM		2.2	115/032	SetSite	
27C256	28	DIP	EPROM		2.2	115/032	Site 40/48	
27C291	24	DIP	EPROM		1.7	E6/AF	Site 40/48	
27C291	28	PLCC	EPROM		1.6	E6/B7	ChipSite	
27C291	28	PLCC	EPROM		3.0	E6/B7	PinSite	28 PIN PLCC MB
27C292	24	DIP	EPROM		1.7	E6/AF	Site 40/48	
27C32	24	DIP	EPROM		2.3	116/024	SetSite	
27C32	24	DIP	EPROM		2.3	116/024	Site 40/48	
27C49	24	DIP	EPROM		3.0	11A/031	Site 40/48	
27C510	32	DIP	EPROM		3.5	115/18D	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
27C512	28	DIP	EPROM		2.2	116/0A4	SetSite	
27C512	28	DIP	EPROM		2.2	116/0A4	Site 40/48	
27C64	28	DIP	EPROM		2.2	115/033	Site 40/48	
27C64	28	DIP	EPROM		2.8	115/033	SetSite	
27L08	24	DIP	EPROM		2.0	21/27	SetSite	
27L08	24	DIP	EPROM		2.0	21/27	Site 40/48	
27P32A	24	DIP	EPROM		1.5	63/24	Site 40/48	
27P32A	24	DIP	EPROM		2.0	63/24	SetSite	
27P64	28	DIP	EPROM		2.0	79/33	SetSite	
27P64	28	DIP	EPROM		2.0	79/33	Site 40/48	
27PC040	32	PLCC	EPROM		3.7	093/1F6	ChipSite	
27PC040	32	PLCC	EPROM		3.7	093/1F6	PinSite	32 PIN PLCC MB
27PC128	28	DIP	EPROM		2.2	115/051	SetSite	
27PC128	28	DIP	EPROM		2.2	115/051	Site 40/48	
27PC128	32	PLCC	EPROM		2.2	115/0C2	ChipSite	
27PC128	32	PLCC	EPROM		3.0	115/0C2	PinSite	32 PIN PLCC MB
27PC240	44	PLCC	EPROM		3.7	115/208	ChipSite	
27PC240	44	PLCC	EPROM		3.7	115/208	PinSite	44 PIN PLCC MB
27PC256	28	DIP	EPROM		2.2	115/032	Site 40/48	
27PC256	28	DIP	EPROM		2.8	115/032	SetSite	
27PC256	32	PLCC	EPROM		2.2	115/0C3	ChipSite	
27PC256	32	PLCC	EPROM		3.0	115/0C3	PinSite	32 PIN PLCC MB
27PC32	24	DIP	EPROM		2.3	116/024	SetSite	
27PC32	24	DIP	EPROM		2.3	116/024	Site 40/48	
27PC512	28	DIP	EPROM		2.2	116/0A4	Site 40/48	
27PC512	28	DIP	EPROM		2.8	116/0A4	SetSite	
27PC512	32	PLCC	EPROM		2.2	116/0C4	ChipSite	
27PC512	32	PLCC	EPROM		3.0	116/0C4	PinSite	32 PIN PLCC MB
27PC64	28	DIP	EPROM		2.2	115/033	SetSite	
27PC64	28	DIP	EPROM		2.2	115/033	Site 40/48	
28F010	32	DIP	FLASH		3.8	186/118	Site 40/48	
28L22	20	DIP	PROM		1.0	13/46	Site 40/48	
28L42	20	DIP	PROM		1.0	13/09	Site 40/48	
28L45	24	DIP	PROM		1.0	13/15	Site 40/48	
28L85	24	DIP	PROM		1.0	13/16	Site 40/48	
28L86	24	DIP	PROM		1.0	13/16	Site 40/48	
28LA22	20	DIP	PROM		1.0	13/46	Site 40/48	
28P42	20	DIP	PROM		1.3	13/09	Site 40/48	
28S166	24	DIP	PROM		1.0	13/21	Site 40/48	
28S2708	24	DIP	PROM		2.0	013/116	Site 40/48	
28S42	20	DIP	PROM		1.0	13/09	Site 40/48	
28S45	24	DIP	PROM		1.0	13/15	Site 40/48	
28S46	24	DIP	PROM		1.0	13/15	Site 40/48	
28S85	24	DIP	PROM		1.0	13/16	Site 40/48	
28S86	24	DIP	PROM		1.0	13/16	Site 40/48	
28SA166	24	DIP	PROM		1.0	13/21	Site 40/48	
28SA42	20	DIP	PROM		1.0	13/09	Site 40/48	
28SA46	24	DIP	PROM		1.0	13/15	Site 40/48	
28SA86	24	DIP	PROM		1.0	13/16	Site 40/48	
29F256	28	DIP	FLASH		2.7	13F/13A	Site 40/48	
29F256	32	PLCC	FLASH		3.4	13F/1BD	ChipSite	
29F256	32	PLCC	FLASH		3.4	13F/1BD	PinSite	32 PIN PLCC MB
29F259	32	DIP	EEPROM		3.4	13F/1C5	Site 40/48	
320E14	68	PLCC	MICRO	2	3.8	220/249	PinSite	68 PIN PLCC MB
320E15	40	DIP	MICRO		2.7	13E/137	Site 40/48	
320E15	44	JLCC	MICRO		2.8	13E/18C	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
320E15	44	JLCC	MICRO		3.0	13E/18C	PinSite	44 PIN PLCC MB
320E17	40	DIP	MICRO	2	2.7	220/137	Site 40/48	
320E17	44	PLCC	MICRO	2	3.8	220/24A	PinSite	44 PIN PLCC MB
320E25	68	PLCC	MICRO	2	3.8	220/248	PinSite	68 PIN PLCC MB
330	20	DIP	EPLD		3.3	2E/95	Site 40/48	
330	20	PLCC	EPLD		3.3	02E/795	ChipSite	
330	20	PLCC	EPLD		3.3	02E/795	PinSite	20 PIN PLCC MB
34L10	16	DIP	PROM		2.2	A1/01	Site 40/48	
34L12	20	PLCC	PROM		2.2	A1/6B	ChipSite	
34L12	20	PLCC	PROM		3.0	A1/6B	PinSite	20 PIN PLCC MB
34L162	20	DIP	PROM		2.2	A1/53	Site 40/48	
34L162	20	PLCC	PROM		2.2	A1/8C	ChipSite	
34L162	20	PLCC	PROM		3.0	A1/8C	PinSite	20 PIN PLCC MB
34L41	18	DIP	PROM		2.2	A1/05	Site 40/48	
34R162	20	DIP	PROM		2.2	A2/3B	Site 40/48	
34R42	20	PLCC	PROM		3.0	0A1/161	ChipSite	
34R42	20	PLCC	PROM		3.0	0A1/161	PinSite	20 PIN PLCC MB
34S10	16	DIP	PROM		2.2	A1/01	Site 40/48	
34S12	20	PLCC	PROM		2.2	A1/6B	ChipSite	
34S12	20	PLCC	PROM		3.0	A1/6B	PinSite	20 PIN PLCC MB
34S162	20	DIP	PROM		2.2	A1/53	Site 40/48	
34S162	20	PLCC	PROM		2.2	A1/8C	ChipSite	
34S162	20	PLCC	PROM		3.0	A1/8C	PinSite	20 PIN PLCC MB
34S41	18	DIP	PROM		2.2	A1/05	Site 40/48	
34SA10	16	DIP	PROM		2.2	A1/01	Site 40/48	
34SA12	20	PLCC	PROM		2.2	A1/6B	ChipSite	
34SA12	20	PLCC	PROM		3.0	A1/6B	PinSite	20 PIN PLCC MB
34SA162	20	DIP	PROM		2.2	A1/53	Site 40/48	
34SA162	20	PLCC	PROM		2.2	A1/8C	ChipSite	
34SA162	20	PLCC	PROM		3.0	A1/8C	PinSite	20 PIN PLCC MB
34SA41	18	DIP	PROM		2.2	A1/05	Site 40/48	
34SR165	24	DIP	PROM		2.2	A2/4E	Site 40/48	
34SR167	28	PLCC	PROM		2.2	A2/C5	ChipSite	
34SR167	28	PLCC	PROM		3.0	A2/C5	PinSite	28 PIN PLCC MB
38L165	24	DIP	PROM		2.2	A1/21	Site 40/48	
38L166	24	DIP	PROM		2.2	A1/21	Site 40/48	
38L167	28	PLCC	PROM		2.2	A1/8B	ChipSite	
38L167	28	PLCC	PROM		3.0	A1/8B	PinSite	28 PIN PLCC MB
38L22	20	DIP	PROM		2.2	A1/08	Site 40/48	
38L22	20	PLCC	PROM		2.2	A1/7B	ChipSite	
38L22	20	PLCC	PROM		3.0	A1/7B	PinSite	20 PIN PLCC MB
38R165	24	DIP	PROM	1	2.2	A2/A3	Site 40/48	
38S030	16	DIP	PROM		2.2	A1/02	Site 40/48	
38S165	24	DIP	PROM		2.2	A1/21	Site 40/48	
38S22	20	DIP	PROM		2.2	A1/08	Site 40/48	
38S22	20	PLCC	PROM		2.2	A1/7B	ChipSite	
38S22	20	PLCC	PROM		3.0	A1/7B	PinSite	20 PIN PLCC MB
38SA030	16	DIP	PROM		2.2	A1/02	Site 40/48	
38SA165	24	DIP	PROM		2.2	A1/21	Site 40/48	
38SA22	20	DIP	PROM		2.2	A1/08	Site 40/48	
38SA22	20	PLCC	PROM		2.2	A1/7B	ChipSite	
38SA22	20	PLCC	PROM		3.0	A1/7B	PinSite	20 PIN PLCC MB
506/A	24	DIP	FPLS		3.6	99/7A	Site 40/48	
506/A	28	PLCC	FPLS		2.7	099/77A	ChipSite	
506/A	28	PLCC	FPLS		3.0	099/77A	PinSite	28 PIN PLCC MB
507/A	24	DIP	PSG		3.6	99/7B	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family / Pinout Code	Module	MatchBook/ Adapter
<b>Texas Instruments (continued)</b>								
507/A	28	PLCC	PSG		2.7	099/77B	ChipSite	28 PIN PLCC MB
507/A	28	PLCC	PSG		3.0	099/77B	PinSite	
529	20	DIP	FPGA		2.2	99/72	Site 40/48	
54ALS526	20	DIP	PROM		2.5	02/D8	Site 40/48	
54ALS527	20	DIP	PROM		2.5	02/D9	Site 40/48	
54ALS528	16	DIP	PROM		2.5	02/DA	Site 40/48	
54ALS812	24	DIP	PROM		2.5	02/DB	Site 40/48	
610	24	DIP	EPLD	37	2.7	26/59	Site 40/48	
610	28	JLCC	EPLD	37	3.2	026/759	ChipSite	28 PIN PLCC MB
610	28	JLCC	EPLD	37	3.2	026/759	PinSite	
610	28	PLCC	EPLD	37	2.7	026/759	ChipSite	
610	28	PLCC	EPLD	37	3.0	026/759	PinSite	28 PIN PLCC MB
630	24	DIP	EPLD		3.3	2E/59	Site 40/48	
630	28	PLCC	EPLD		3.3	02E/759	ChipSite	
630	28	PLCC	EPLD		3.3	02E/759	PinSite	28 PIN PLCC MB
74ALS526	20	DIP	PROM		2.5	02/D8	Site 40/48	
74ALS527	20	DIP	PROM		3.0	02/D9	Site 40/48	
74ALS528	16	DIP	PROM		2.5	02/DA	Site 40/48	
74ALS812	24	DIP	PROM		2.5	02/DB	Site 40/48	
7742	40	DIP	MICRO		1.1	57/1F	Site 40/48	
77C82	44	PLCC	MICRO		3.4	176/181	PinSite	44 PIN PLCC MB
77C82NL	40	DIP	MICRO		3.4	176/180	Site 40/48	
82S105A/B	28	DIP	FPLS		2.6	99/63	Site 40/48	
82S105A/B	28	PLCC	FPLS		2.8	099/763	ChipSite	28 PIN PLCC MB
82S105A/B	28	PLCC	FPLS		3.0	099/763	PinSite	
82S167	24	DIP	FPLS		2.5	99/60	Site 40/48	
82S191B	24	DIP	PROM		2.2	A1/21	Site 40/48	
839	24	DIP	FPLA		1.3	99/70	Site 40/48	
839	28	PLCC	FPLA		1.3	099/770	ChipSite	28 PIN PLCC MB
839	28	PLCC	FPLA		3.0	099/770	PinSite	
840	24	DIP	FPLA		1.3	99/70	Site 40/48	
840	28	PLCC	FPLA		1.3	099/770	ChipSite	28 PIN PLCC MB
840	28	PLCC	FPLA		3.0	099/770	PinSite	
87C257	28	DIP	EPROM		2.8	115/032	Site 40/48	
910	40	DIP	EPLD		2.7	26/96	Site 40/48	
910	44	JLCC	EPLD		3.2	026/796	ChipSite	
910	44	JLCC	EPLD		3.2	026/796	PinSite	44 PIN PLCC MB
910	44	PLCC	EPLD		2.7	026/796	ChipSite	
910	44	PLCC	EPLD		3.0	026/796	PinSite	44 PIN PLCC MB
C16L8	20	DIP	PAL		2.2	42/17	Site 40/48	
C16R4	20	DIP	PAL		2.2	42/24	Site 40/48	
C16R6	20	DIP	PAL		2.2	42/24	Site 40/48	
C16R8	20	DIP	PAL		2.2	42/24	Site 40/48	
C22V10T	24	DIP	PAL		3.0	42/29	Site 40/48	
C22V10T	28	PLCC	PAL		3.0	042/729	ChipSite	28 PIN PLCC MB
C22V10T	28	PLCC	PAL		3.0	042/729	PinSite	
C22V10ZP	24	DIP	PAL		3.0	42/28	Site 40/48	
C22V10ZP	28	PLCC	PAL		3.0	042/728	ChipSite	28 PIN PLCC MB
C22V10ZP	28	PLCC	PAL		3.0	042/728	PinSite	
R19L8	24	DIP	PAL		2.5	99/89	Site 40/48	
R19L8	28	PLCC	PAL		2.5	099/789	ChipSite	
R19L8	28	PLCC	PAL		3.0	099/789	PinSite	28 PIN PLCC MB
R19R4	24	DIP	PAL		2.5	99/91	Site 40/48	
R19R4	28	PLCC	PAL		2.5	099/791	ChipSite	28 PIN PLCC MB
R19R4	28	PLCC	PAL		3.0	099/791	PinSite	
R19R6	24	DIP	PAL		2.5	99/91	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
Texas Instruments (continued)								
R19R6	28	PLCC	PAL		2.5	099/791	ChipSite	28 PIN PLCC MB
R19R6	28	PLCC	PAL		3.0	099/791	PinSite	
R19R8	24	DIP	PAL		2.5	99/91	Site 40/48	
R19R8	28	PLCC	PAL		2.5	099/791	ChipSite	28 PIN PLCC MB
R19R8	28	PLCC	PAL		3.0	099/791	PinSite	
T19L8	24	DIP	PAL		2.5	99/88	Site 40/48	
T19L8	28	PLCC	PAL		2.5	099/788	ChipSite	28 PIN PLCC MB
T19L8	28	PLCC	PAL		3.0	099/788	PinSite	
T19R4	24	DIP	PAL		2.5	99/90	Site 40/48	
T19R4	28	PLCC	PAL		2.5	099/790	ChipSite	28 PIN PLCC MB
T19R4	28	PLCC	PAL		3.0	099/790	PinSite	
T19R6	24	DIP	PAL		2.5	99/90	Site 40/48	28 PIN PLCC MB
T19R6	28	PLCC	PAL		2.5	099/790	ChipSite	
T19R6	28	PLCC	PAL		3.0	099/790	PinSite	
T19R8	24	DIP	PAL		2.5	99/90	Site 40/48	28 PIN PLCC MB
T19R8	28	PLCC	PAL		2.5	099/790	ChipSite	
T19R8	28	PLCC	PAL		3.0	099/790	PinSite	28 PIN PLCC MB
TMS2716	24	DIP	EPROM		2.5	23/28	Site 40/48	
TMS2716	24	DIP	EPROM		2.6	23/28	SetSite	
Toshiba America								
24128	28	DIP	EPROM		2.0	45/51	SetSite	SOIC_35
24128	28	DIP	EPROM		2.0	45/51	Site 40/48	
24128A	28	DIP	EPROM		2.0	5C/51	SetSite	
24128A	28	DIP	EPROM		2.0	5C/51	Site 40/48	
24128A	28	SO	EPROM		3.9	05C/852	PinSite	
24256	28	DIP	EPROM		2.0	45/32	SetSite	SOIC_35
24256	28	DIP	EPROM		2.0	45/32	Site 40/48	
24256A	28	DIP	EPROM		2.0	5C/32	SetSite	
24256A	28	DIP	EPROM		2.0	5C/32	Site 40/48	
24256A	28	SO	EPROM		3.9	05C/832	PinSite	
24512	28	DIP	EPROM		2.2	5E/A4	SetSite	SOIC_35
24512	28	DIP	EPROM		2.2	5E/A4	Site 40/48	
2464	28	DIP	EPROM		2.0	45/33	SetSite	
2464	28	DIP	EPROM		2.0	45/33	Site 40/48	
2464A	28	DIP	EPROM		2.0	5C/33	SetSite	
2464A	28	DIP	EPROM		2.0	5C/33	Site 40/48	SOIC_35
2464A	28	SO	EPROM		3.9	05C/833	PinSite	
27128	28	DIP	EPROM		2.0	79/51	SetSite	
27128	28	DIP	EPROM		2.0	79/51	Site 40/48	
27128A	28	DIP	EPROM		2.0	5C/51	SetSite	
27128A	28	DIP	EPROM		2.0	5C/51	Site 40/48	SOIC_35
27256	28	DIP	EPROM		2.0	45/32	SetSite	
27256	28	DIP	EPROM		2.0	45/32	Site 40/48	
27256A	28	DIP	EPROM		2.0	5C/32	SetSite	
27256A	28	DIP	EPROM		2.0	5C/32	Site 40/48	
27256B	28	DIP	EPROM		2.2	5C/32	SetSite	SOIC_35
27256B	28	DIP	EPROM		2.2	5C/32	Site 40/48	
2732	24	DIP	EPROM		2.0	19/24	SetSite	
2732	24	DIP	EPROM		2.0	19/24	Site 40/48	
2732A	24	DIP	EPROM		2.0	27/24	SetSite	
2732A	24	DIP	EPROM		2.0	27/24	Site 40/48	SOIC_35
27512	28	DIP	EPROM		2.2	5E/A4	SetSite	
27512	28	DIP	EPROM		2.2	5E/A4	Site 40/48	
27512A	28	DIP	EPROM		2.2	5E/A4	SetSite	
27512A	28	DIP	EPROM		2.2	5E/A4	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Toshiba America (continued)</b>								
2764	28	DIP	EPROM		2.0	79/33	SetSite	
2764	28	DIP	EPROM		2.0	79/33	Site 40/48	
2764A	28	DIP	EPROM		2.0	5C/33	SetSite	
2764A	28	DIP	EPROM		2.0	5C/33	Site 40/48	
541001F	32	SO	EPROM		3.9	05C/8CC	PinSite	SOIC_42
54256A	28	DIP	EPROM		2.0	5C/32	SetSite	
54256A	28	DIP	EPROM		2.0	5C/32	Site 40/48	
54256A	28	SO	EPROM		3.9	05C/832	PinSite	SOIC_35
544000	32	SO	EPROM		3.9	12E/8F6	PinSite	SOIC_42
544200	40	SO	EPROM		3.9	12E/872	PinSite	SOIC_42
54512A	28	SO	EPROM		3.9	05E/8A4	PinSite	SOIC_35
571000	32	DIP	EPROM		2.0	5C/CB	SetSite	
571000	32	DIP	EPROM		2.0	5C/CB	Site 40/48	
571000A	32	DIP	EPROM		3.1	5C/CB	Site 40/48	
571001	32	DIP	EPROM		2.0	5C/CC	SetSite	
571001	32	DIP	EPROM		2.0	5C/CC	Site 40/48	
571001A	32	DIP	EPROM		3.3	5C/CC	Site 40/48	
571024	40	DIP	EPROM		2.1	5F/A8	Site 40/48	
571024	40	DIP	EPROM		2.8	5F/A8	SetSite	
5716200D-150/200	42	DIP	EPROM		3.8	1FC/1FF	Site 48	
57256	28	DIP	EPROM		2.0	45/32	SetSite	
57256	28	DIP	EPROM		2.0	45/32	Site 40/48	
57256A	28	DIP	EPROM		3.0	5C/32	SetSite	
57256A	28	DIP	EPROM		3.0	5C/32	Site 40/48	
574000	32	DIP	EPROM		2.5	12E/0F6	Site 40/48	
574000	32	DIP	EPROM		2.7	12E/0F6	SetSite	
574096	40	DIP	EPROM		3.4	169/089	Site 40/48	
574096	40	DIP	EPROM		3.6	169/089	SetSite	
574200	40	DIP	EPROM		3.1	169/172	Site 40/48	
57512A	28	DIP	EPROM		2.3	5E/A4	Site 40/48	
57512A	28	DIP	EPROM		2.8	5E/A4	SetSite	
578200D-150	42	DIP	EPROM		3.8	169/1A9	Site 48	
578200D-200	42	DIP	EPROM		3.8	169/1A9	Site 48	
57H1000A	32	DIP	EPROM		3.3	5C/CB	SetSite	
57H1000A	32	DIP	EPROM		3.3	5C/CB	Site 40/48	
57H1001A	32	DIP	EPROM		3.6	5C/CC	Site 40/48	
57H1024	40	DIP	EPROM		2.5	5F/A8	Site 40/48	
57H1024	40	DIP	EPROM		2.8	5F/A8	SetSite	
57H1024A	40	DIP	EPROM		3.5	5F/A8	Site 40/48	
57H1025A	40	DIP	EPROM		3.2	5F/A8	Site 40/48	
57H1026	40	DIP	EPROM		3.6	1CA/0A8	Site 40/48	
57H256	28	DIP	EPROM		2.5	5C/32	Site 40/48	
58257A	28	DIP	EEPROM		2.3	117/032	Site 40/48	
58257A	28	SO	FLASH		3.9	117/832	PinSite	SOIC_35
58257A-LV	28	DIP	EEPROM		2.8	150/032	Site 40/48	
58F1001	32	DIP	EEPROM		3.4	1A6/118	Site 40/48	
8755A	40	DIP	MICRO		1.5	47/55	Site 40/48	
972010	44	PLCC	FLASH		3.9	240/380	ChipSite	
972010	44	PLCC	FLASH		3.9	240/380	PinSite	44 PIN PLCC MB
97208	32	DIP	EEPROM		3.8	1D1/18B	Site 40/48	
97208A	32	DIP	FLASH		3.8	1D1/18B	Site 40/48	
97209	32	DIP	FLASH		3.9	1D3/1DF	Site 40/48	
97209	32	PLCC	FLASH		3.9	1D3/381	ChipSite	
97209	32	PLCC	FLASH		3.9	1D3/381	PinSite	32 PIN PLCC MB
97218	32	DIP	EEPROM		3.6	1D2/18B	Site 40/48	
97218A	32	DIP	FLASH		3.6	1D2/18B	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Toshiba America (continued)</b>								
9800P	20	DIP	PLA		2.8	149/0B1	Site 40/48	
9801P	20	DIP	PLA		2.8	14A/0B1	Site 40/48	
9808P	20	DIP	ZPLA		3.9	224/252	Site 40/48	
<b>VLSI Technology, Inc.</b>								
16V8	20	DIP	GAL	22,49	1.7	2F/55	Site 40/48	
16V8	20	PLCC	GAL	22,49	1.7	02F/755	ChipSite	20 PIN PLCC MB
16V8	20	PLCC	GAL	22,49	3.0	02F/755	PinSite	
16V8	20	SO	GAL	22,49	1.7	02F/855	ChipSite	SOIC_30
16V8	20	SO	GAL	22,49	3.0	02F/855	PinSite	
20V8	24	DIP	GAL	22,49	1.5	2F/57	Site 40/48	
20V8	24	SO	GAL	22,49	1.5	02F/857	ChipSite	SOIC_30
20V8	24	SO	GAL	22,49	3.0	02F/857	PinSite	
20V8	28	PLCC	GAL	22,49	1.5	02F/757	ChipSite	28 PIN PLCC MB
20V8	28	PLCC	GAL	22,49	3.0	02F/757	PinSite	
27C128	28	DIP	EPROM		2.1	93/51	SetSite	
27C128	28	DIP	EPROM		2.1	93/51	Site 40/48	
27C256	28	DIP	EPROM		2.1	93/32	SetSite	
27C256	28	DIP	EPROM		2.1	93/32	Site 40/48	
27C512	28	DIP	EPROM		2.0	4B/A4	SetSite	
27C512	28	DIP	EPROM		2.0	4B/A4	Site 40/48	
27C64	28	DIP	EPROM		1.7	5D/33	Site 40/48	
27C64	28	DIP	EPROM		2.0	5D/33	SetSite	
<b>Waferscale Integration, Inc.</b>								
27C010L	32	DIP	EPROM		3.0	11B/0CB	SetSite	
27C010L	32	DIP	EPROM		3.0	11B/0CB	Site 40/48	
27C010L	32	LCC	EPROM	44	3.0	11B/0DE	ChipSite	32 PIN LCC MB
27C010L	32	LCC	EPROM		3.0	11B/0DE	PinSite	
27C010L	32	PLCC	EPROM		3.0	11B/0DE	ChipSite	
27C010L	32	PLCC	EPROM		3.0	11B/0DE	PinSite	32 PIN PLCC MB
27C010R	32	DIP	EPROM		3.0	11B/0CC	SetSite	
27C010R	32	DIP	EPROM		3.0	11B/0CC	Site 40/48	
27C128F	28	DIP	EPROM		2.0	3C/51	SetSite	
27C128F	28	DIP	EPROM		2.0	3C/51	Site 40/48	
27C128F	32	LCC	EPROM	44	2.4	3C/C2	ChipSite	32 PIN LCC MB
27C128F	32	LCC	EPROM		3.0	3C/C2	PinSite	
27C128L	28	DIP	EPROM		3.0	11B/051	SetSite	
27C128L	28	DIP	EPROM		3.0	11B/051	Site 40/48	
27C128L	32	JLCC	EPROM		3.0	11B/0C2	ChipSite	
27C128L	32	JLCC	EPROM		3.0	11B/0C2	PinSite	32 PIN PLCC MB
27C128L	32	PLCC	EPROM		3.0	11B/0C2	ChipSite	32 PIN PLCC MB
27C128L	32	PLCC	EPROM		3.0	11B/0C2	PinSite	
27C191	28	DIP	PROM		2.0	7B/21	Site 40/48	
27C191	28	DIP	PROM		2.8	7B/21	SetSite	
27C210L	40	DIP	EPROM		3.0	15C/0A8	Site 40/48	
27C210L	44	JLCC	EPROM		3.1	15C/088	ChipSite	44 PIN PLCC MB
27C210L	44	JLCC	EPROM		3.1	15C/088	PinSite	
27C210L	44	PLCC	EPROM		3.0	15C/088	ChipSite	44 PIN PLCC MB
27C210L	44	PLCC	EPROM		3.0	15C/088	PinSite	
27C256F	28	DIP	EPROM		2.4	124/032	Site 40/48	
27C256F	28	DIP	EPROM		3.0	124/032	SetSite	
27C256F	32	LCC	EPROM	44	2.4	124/0C3	ChipSite	32 PIN LCC MB
27C256F	32	LCC	EPROM		3.0	124/0C3	PinSite	
27C256L	28	DIP	EPROM		3.5	11B/032	SetSite	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Waferscale Integration, Inc. (continued)</b>								
27C256L	28	DIP	EPROM	44	3.5	11B/032	Site 40/48	32 PIN LCC MB
27C256L	32	LCC	EPROM		3.5	11B/0C3	ChipSite	
27C256L	32	LCC	EPROM		3.5	11B/0C3	PinSite	
27C256L	32	PLCC	EPROM		3.5	11B/0C3	ChipSite	
27C256L	32	PLCC	EPROM		3.5	11B/0C3	PinSite	
27C291	24	DIP	PROM	44	2.0	7B/21	SetSite	32 PIN PLCC MB
27C291	24	DIP	PROM		2.0	7B/21	Site 40/48	
27C43	24	DIP	PROM		2.0	7B/63	SetSite	
27C43	24	DIP	PROM		2.0	7B/63	Site 40/48	
27C49	24	DIP	PROM		2.0	7B/67	SetSite	
27C49	24	DIP	PROM		2.0	7B/67	Site 40/48	
27C51	28	DIP	PROM	44	2.0	7B/78	SetSite	32 PIN LCC MB
27C51	28	DIP	PROM		2.0	7B/78	Site 40/48	
27C512F	28	DIP	EPROM		2.5	125/0A4	Site 40/48	
27C512L	28	DIP	EPROM		3.0	11C/0A4	Site 40/48	
27C512L	32	LCC	EPROM		3.0	11C/0C4	ChipSite	
27C512L	32	LCC	EPROM	44	3.0	11C/0C4	PinSite	32 PIN PLCC MB
27C512L	32	PLCC	EPROM		3.0	11C/0C4	ChipSite	
27C512L	32	PLCC	EPROM		3.0	11C/0C4	PinSite	
27C64F	28	DIP	EPROM		2.0	3C/33	SetSite	
27C64F	28	DIP	EPROM		2.0	3C/33	Site 40/48	
27C64L	28	DIP	EPROM	44	3.0	11B/033	Site 40/48	32 PIN PLCC MB
27C64L	32	JLCC	EPROM		3.0	11B/0C1	ChipSite	
27C64L	32	JLCC	EPROM		3.0	11B/0C1	PinSite	
27C64L	32	PLCC	EPROM		3.0	11B/0C1	ChipSite	
27C64L	32	PLCC	EPROM		3.0	11B/0C1	PinSite	
27C65	40	DIP	EPROM	49,86	2.0	2C/E7	Site 40/48	28 PIN PLCC MB
448	28	DIP	SAM		2.6	F7/2F	Site 40/48	
448	28	JLCC	SAM		2.6	0F7/72F	ChipSite	
448	28	JLCC	SAM		3.0	0F7/72F	PinSite	
57C128F	28	DIP	EPROM		2.5	3C/51	Site 40/48	
57C128F	28	DIP	EPROM	44	2.8	3C/51	SetSite	32 PIN PLCC MB
57C128F	32	JLCC	EPROM		3.8	3C/C2	ChipSite	
57C128F	32	JLCC	EPROM		3.8	3C/C2	PinSite	
57C128F	32	LCC	EPROM		2.4	3C/C2	ChipSite	
57C128F	32	LCC	EPROM		3.0	3C/C2	PinSite	
57C128FB	28	DIP	EPROM	19	3.9	F3C/051	SetSite	32 PIN PLCC MB
57C128FB	28	DIP	EPROM		3.9	F3C/051	Site 40/48	
57C128FB	32	PLCC	EPROM		3.9	F3C/0C2	ChipSite	
57C128FB	32	PLCC	EPROM		3.9	F3C/0C2	PinSite	
57C191B	24	DIP	EPROM		2.5	7B/21	Site 40/48	
57C191B	24	DIP	EPROM	19	2.8	7B/21	SetSite	28 PIN PLCC MB
57C191B	28	PLCC	EPROM		2.5	7B/8B	ChipSite	
57C191B	28	PLCC	EPROM		3.0	7B/8B	PinSite	
57C191C	24	DIP	EPROM		2.5	12D/021	Site 40/48	
57C256F	28	DIP	EPROM		2.4	124/032	Site 40/48	
57C256F	32	LCC	EPROM	44	2.4	124/0C3	ChipSite	32 PIN LCC MB
57C256F	32	LCC	EPROM		3.0	124/0C3	PinSite	
57C256FB	28	DIP	EPROM		3.9	F3C/032	Site 40/48	
57C256FB	32	PLCC	EPROM		3.9	F3C/0C3	ChipSite	
57C256FB	32	PLCC	EPROM		3.9	F3C/0C3	PinSite	
57C257	40	DIP	EPROM	44	2.4	2C/E1	Site 40/48	44 PIN PLCC MB
57C257	44	LCC	EPROM		2.4	01F/113	ChipSite	
57C257	44	LCC	EPROM		3.0	01F/113	PinSite	
57C257	44	PLCC	EPROM		2.5	01F/113	ChipSite	
57C257	44	PLCC	EPROM		3.0	01F/113	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Waferscale Integration, Inc. (continued)</b>								
57C291	24	DIP	PROM		2.5	7B/21	Site 40/48	
57C291	24	DIP	PROM		2.8	7B/21	SetSite	
57C291BT	24	DIP	PROM		2.5	7B/21	Site 40/48	
57C291CT	24	DIP	PROM		2.5	12D/021	Site 40/48	
57C43	24	DIP	PROM		2.0	7B/63	SetSite	
57C43	24	DIP	PROM		2.0	7B/63	Site 40/48	
57C43B	24	DIP	PROM	19	2.5	7B/63	SetSite	
57C43B	24	DIP	PROM	19	2.5	7B/63	Site 40/48	
57C43B	28	PLCC	PROM	19	2.5	7B/8E	ChipSite	
57C43B	28	PLCC	PROM	19	3.0	7B/8E	PinSite	28 PIN PLCC MB
57C43BT	24	DIP	PROM	19	2.5	7B/63	Site 40/48	
57C43C	24	DIP	RPROM		3.8	22D/063	Site 40/48	
57C43C	28	PLCC	RPROM		3.8	22D/663	ChipSite	
57C43C	28	PLCC	RPROM		3.8	22D/663	PinSite	28 PIN PLCC MB
57C45	24	DIP	PROM	3	2.7	122/0B0	Site 40/48	
57C45	28	LCC	PROM	3	3.7	122/153	PinSite	28 PIN LCC MB
57C45	28	LCC	PROM	3,44	3.7	122/153	ChipSite	
57C45BT	24	DIP	PROM		3.6	122/0B0	Site 40/48	
57C45T	24	DIP	PROM		3.6	122/0B0	Site 40/48	
57C49	24	DIP	PROM		2.0	7B/67	SetSite	
57C49	24	DIP	PROM		2.0	7B/67	Site 40/48	
57C49	28	LCC	PROM	44	2.5	7B/9A	ChipSite	
57C49	28	LCC	PROM		3.0	7B/9A	PinSite	28 PIN LCC MB
57C49B	24	DIP	PROM	19	2.5	7B/67	Site 40/48	
57C49B	24	DIP	PROM	19	2.8	7B/67	SetSite	
57C49B	28	LCC	PROM	19	3.0	7B/9A	PinSite	28 PIN LCC MB
57C49B	28	LCC	PROM	19,44	2.5	7B/9A	ChipSite	
57C49B	28	PLCC	PROM	19	2.5	7B/9A	ChipSite	
57C49B	28	PLCC	PROM	19	3.0	7B/9A	PinSite	28 PIN PLCC MB
57C49BT	24	DIP	PROM	19	2.5	7B/67	Site 40/48	
57C49C	24	DIP	RPROM		3.7	22D/1FC	Site 40/48	
57C49C	28	PLCC	RPROM		3.8	22D/7FC	ChipSite	
57C49C	28	PLCC	RPROM		3.8	22D/7FC	PinSite	28 PIN PLCC MB
57C51	28	DIP	PROM		2.0	7B/78	SetSite	
57C51	28	DIP	PROM		2.0	7B/78	Site 40/48	
57C51B	28	DIP	PROM		2.5	7B/78	Site 40/48	
57C51B	28	DIP	PROM		3.0	7B/78	SetSite	
57C51B	32	LCC	PROM	44	2.5	07B/123	ChipSite	
57C51B	32	LCC	PROM		3.0	07B/123	PinSite	32 PIN LCC MB
57C51BT	28	DIP	PROM		2.5	7B/78	SetSite	
57C51BT	28	DIP	PROM		2.5	7B/78	Site 40/48	
57C51C	28	DIP	EPROM		3.4	12D/078	Site 40/48	
57C51C	28	DIP	EPROM		3.9	12D/078	SetSite	
57C51C	32	JLCC	EPROM		3.8	12D/978	ChipSite	
57C51C	32	JLCC	EPROM		3.8	12D/978	PinSite	32 PIN PLCC MB
57C51C	32	PLCC	EPROM		3.8	12D/978	ChipSite	
57C51C	32	PLCC	EPROM		3.8	12D/978	PinSite	32 PIN PLCC MB
57C64F	28	DIP	EPROM		2.0	3C/33	SetSite	
57C64F	28	DIP	EPROM		2.0	3C/33	Site 40/48	
57C64F	32	LCC	EPROM	44	2.4	3C/C1	ChipSite	
57C64F	32	LCC	EPROM		3.0	3C/C1	PinSite	32 PIN LCC MB
57C65	40	DIP	EPROM		2.0	2C/E7	Site 40/48	
57C65	44	LCC	EPROM	44	2.5	02C/124	ChipSite	
57C65	44	LCC	EPROM		3.0	02C/124	PinSite	44 PIN LCC MB
57C71C	28	DIP	PROM		3.0	12D/169	Site 40/48	
MAP168	44	LCC	MICRO	44,47	2.8	14E/150	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Waferscale Integration, Inc. (continued)</b>								
MAP168	44	LCC	MICRO	47	3.0	14E/150	PinSite	44 PIN LCC MB
MAP168	44	PGA	MICRO	47	3.1	14E/16A	PinSite	
PAC1000	88	PGA	MICRO	2	3.1	14D/14F	PinSite	
PSD301	44	JLCC	PSD	57	3.9	17D/189	ChipSite	
PSD301	44	JLCC	PSD	57	3.9	17D/189	PinSite	44 PIN PLCC MB
PSD302	44	PLCC	PSD	57	3.8	28E/23D	ChipSite	
PSD302	44	PLCC	PSD	57	3.8	28E/23D	PinSite	44 PIN PLCC MB
PSD303	44	JLCC	PSD	57	3.8	28E/23E	ChipSite	
PSD303	44	JLCC	PSD	57	3.8	28E/23E	PinSite	44 PIN PLCC MB
PSD311	44	JLCC	PSD	57	3.9	17D/189	ChipSite	
PSD311	44	JLCC	PSD	57	3.9	17D/189	PinSite	44 PIN PLCC MB
PSD312	44	JLCC	PSD	57	3.8	28E/23D	ChipSite	
PSD312	44	JLCC	PSD	57	3.8	28E/23D	PinSite	44 PIN PLCC MB
PSD313	44	JLCC	PSD	57	3.8	28E/23E	ChipSite	
PSD313	44	JLCC	PSD	57	3.8	28E/23E	PinSite	44 PIN PLCC MB
<b>Xicor, Inc.</b>								
2001	24	DIP	NOVRAM		3.2	189/195	Site 40/48	
2004	28	DIP	NOVRAM		3.2	189/196	Site 40/48	
2004	32	LCC	NOVRAM		3.2	189/198	ChipSite	
2004	32	LCC	NOVRAM		3.2	189/198	PinSite	32 PIN LCC MB
2004	32	PLCC	NOVRAM		3.2	189/198	ChipSite	
2004	32	PLCC	NOVRAM		3.2	189/198	PinSite	32 PIN PLCC MB
2201A	18	DIP	NOVRAM		3.3	184/193	Site 40/48	
2210	18	DIP	NOVRAM	34	3.2	184/191	Site 48	
2212	18	DIP	NOVRAM	34	3.2	184/194	Site 48	
22C10	18	DIP	NOVRAM	34	3.3	184/191	Site 48	
2402	8	DIP	EEPROM		2.8	120/119	Site 40/48	
2404	8	DIP	EEPROM		2.8	120/11A	Site 40/48	
2444	8	DIP	NOVRAM		3.2	18A/197	Site 40/48	
24C01	8	DIP	EEPROM		3.2	183/190	Site 40/48	
24C01-3	8	DIP	EEPROM	118	3.4	1AF/190	Site 40/48	
24C02	8	DIP	EEPROM		3.8	F20/119	Site 40/48	
24C04	8	DIP	EEPROM		2.8	120/11A	Site 40/48	
24C04-3	8	DIP	EEPROM	118	3.4	1AE/11A	Site 40/48	
24C08-3	8	DIP	EEPROM	118	3.6	1AE/1EE	Site 40/48	
24C16	8	DIP	EEPROM		2.8	120/11B	Site 40/48	
24C16-3	8	DIP	EEPROM	118	3.4	1AE/11B	Site 40/48	
24LC01	8	DIP	EEPROM		3.3	183/190	Site 40/48	
24LC04	8	DIP	EEPROM		3.3	120/11A	Site 40/48	
24LC16	8	DIP	EEPROM		3.3	120/11B	Site 40/48	
2804A	24	DIP	EEPROM		2.1	B7/82	SetSite	
2804A	24	DIP	EEPROM		2.1	B7/82	Site 40/48	
2816A	24	DIP	EEPROM		2.1	B7/23	SetSite	
2816A	24	DIP	EEPROM		2.1	B7/23	Site 40/48	
2816A	32	LCC	EEPROM	44	2.8	0B7/15C	ChipSite	
2816A	32	LCC	EEPROM		3.0	0B7/15C	PinSite	32 PIN LCC MB
2816A	32	PLCC	EEPROM		2.8	0B7/15C	ChipSite	
2816A	32	PLCC	EEPROM		3.0	0B7/15C	PinSite	32 PIN PLCC MB
2816B	24	DIP	EEPROM		2.5	CC/96	Site 40/48	
2816B	24	DIP	EEPROM		2.8	CC/96	SetSite	
2816B	32	LCC	EEPROM	44	2.8	0CC/10D	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Xicor, Inc. (continued)</b>								
2816B	32	LCC	EEPROM		3.0	0CC/10D	PinSite	32 PIN LCC MB
2816B	32	PLCC	EEPROM		2.5	0CC/10D	ChipSite	
2816B	32	PLCC	EEPROM		3.0	0CC/10D	PinSite	32 PIN PLCC MB
2816C	24	DIP	EEPROM		3.2	CC/96	SetSite	
2816C	24	DIP	EEPROM		3.2	CC/96	Site 40/48	
2816C	32	PLCC	EEPROM		3.3	0CC/1AF	ChipSite	
2816C	32	PLCC	EEPROM		3.3	0CC/1AF	PinSite	32 PIN PLCC MB
28256	28	DIP	EEPROM	36	2.4	BA/99	SetSite	
28256	28	DIP	EEPROM	36	2.4	BA/99	Site 40/48	
28256	32	LCC	EEPROM	36	3.0	BA/ED	PinSite	32 PIN LCC MB
28256	32	LCC	EEPROM	36,44	2.8	BA/ED	ChipSite	
28256	32	PLCC	EEPROM	36	2.5	BA/ED	ChipSite	
28256	32	PLCC	EEPROM	36	3.0	BA/ED	PinSite	32 PIN PLCC MB
2864A	28	DIP	EEPROM		2.5	CC/98	SetSite	
2864A	28	DIP	EEPROM		2.5	CC/98	Site 40/48	
2864A	32	LCC	EEPROM	44	2.5	CC/5D	ChipSite	
2864A	32	LCC	EEPROM		3.0	CC/5D	PinSite	32 PIN LCC MB
2864A	32	PLCC	EEPROM		2.5	CC/5D	ChipSite	
2864A	32	PLCC	EEPROM		3.0	CC/5D	PinSite	32 PIN PLCC MB
2864B	28	DIP	EEPROM		2.5	CA/98	SetSite	
2864B	28	DIP	EEPROM		2.5	CA/98	Site 40/48	
2864B	32	LCC	EEPROM		3.2	CA/5D	ChipSite	
2864B	32	LCC	EEPROM		3.2	CA/5D	PinSite	32 PIN LCC MB
2864B	32	PLCC	EEPROM		2.8	CA/5D	ChipSite	
2864B	32	PLCC	EEPROM		3.0	CA/5D	PinSite	32 PIN PLCC MB
2864H	28	DIP	EEPROM		2.5	CA/98	SetSite	
2864H	28	DIP	EEPROM		2.5	CA/98	Site 40/48	
2864H	32	LCC	EEPROM	44	2.8	CA/5D	ChipSite	
2864H	32	LCC	EEPROM		3.0	CA/5D	PinSite	32 PIN LCC MB
2864H	32	PLCC	EEPROM		3.3	CA/5D	ChipSite	
2864H	32	PLCC	EEPROM		3.3	CA/5D	PinSite	32 PIN PLCC MB
28C010	32	DIP	EEPROM	36	3.7	0BA/110	Site 40/48	
28C256	28	DIP	EEPROM	36	2.5	BA/99	SetSite	
28C256	28	DIP	EEPROM	36	2.5	BA/99	Site 40/48	
28C256	28	PGA	EEPROM	36	3.5	0BA/1C9	PinSite	
28C256	32	LCC	EEPROM	36	3.2	BA/ED	PinSite	32 PIN LCC MB
28C256	32	LCC	EEPROM	36,44	3.2	BA/ED	ChipSite	
28C256	32	PLCC	EEPROM	36	3.2	BA/ED	ChipSite	
28C256	32	PLCC	EEPROM	36	3.2	BA/ED	PinSite	32 PIN PLCC MB
28C256B	28	DIP	EEPROM	36	3.2	BA/99	SetSite	
28C256B	28	DIP	EEPROM	36	3.2	BA/99	Site 40/48	
28C512	32	DIP	EEPROM		3.6	2DC/2BB	Site 40/48	
28C512	32	LCC	EEPROM	44	3.6	2DC/2BC	ChipSite	
28C512	32	LCC	EEPROM		3.6	2DC/2BC	PinSite	32 PIN LCC MB
28C512	32	PLCC	EEPROM		3.6	2DC/2BC	ChipSite	
28C512	32	PLCC	EEPROM		3.6	2DC/2BC	PinSite	32 PIN PLCC MB
28C513	32	LCC	EEPROM	44	3.6	2DC/2BD	ChipSite	
28C513	32	LCC	EEPROM		3.6	2DC/2BD	PinSite	32 PIN LCC MB
28C513	32	PLCC	EEPROM		3.6	2DC/2BD	ChipSite	
28C513	32	PLCC	EEPROM		3.6	2DC/2BD	PinSite	32 PIN PLCC MB
28C64	28	DIP	EEPROM	36	2.5	BA/98	SetSite	
28C64	28	DIP	EEPROM	36	2.5	BA/98	Site 40/48	
28C64	32	LCC	EEPROM	36	3.3	BA/5D	PinSite	32 PIN LCC MB
28C64	32	LCC	EEPROM	36,44	3.3	BA/5D	ChipSite	
28C64	32	PLCC	EEPROM	36	3.3	BA/5D	ChipSite	
28C64	32	PLCC	EEPROM	36	3.3	BA/5D	PinSite	32 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Xicor, Inc. (continued)</b>								
28C64B	28	DIP	EEPROM	36	3.2	BA/98	SetSite	
28C64B	28	DIP	EEPROM	36	3.2	BA/98	Site 40/48	
M28C010	32	DIP	EEPROM	147,36	3.7	198/110	SetSite	
M28C010	32	DIP	EEPROM	147,36	3.7	198/110	Site 40/48	
<b>Xilinx</b>								
1736	8	DIP	EPROM	46	3.0	D3/EE	Site 40/48	
1736A	8	DIP	PROM	46	3.0	14F/0EE	Site 40/48	
1736A	20	PLCC	EPROM	46	3.4	14F/1C6	ChipSite	
1736A	20	PLCC	EPROM	46	3.4	14F/1C6	PinSite	20 PIN PLCC MB
1765	8	DIP	PROM	46,99	3.2	167/16F	Site 40/48	
1765	20	PLCC	EPROM	46,99	3.4	167/1BC	ChipSite	
1765	20	PLCC	EPROM	46,99	3.4	167/1BC	PinSite	20 PIN PLCC MB
<b>Zilog</b>								
86E21	40	DIP	MICRO	2,153	2.6	139/130	Site 40/48	
86E21	44	PLCC	MICRO	2,153	3.8	139/930	ChipSite	
86E21	44	PLCC	MICRO	2,153	3.8	139/930	PinSite	44 PIN PLCC MB
86E22	40	DIP	MICRO	2,153	3.7	139/130	Site 40/48	
86E40	40	DIP	MICRO	53	3.9	139/330	Site 40/48	
86E40	44	PLCC	MICRO	53	3.9	139/A30	PinSite	44 PIN PLCC MB
Z86E08	18	DIP	MICRO		3.6	1DB/1E4	Site 48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Advanced Micro Devices/MMI CE16V8H-25/4 DIP as:</b>								
CE16L8	20	DIP	→ V8	49	3.9	80/17	Site 40/48	
CE16R4	20	DIP	→ V8	49	3.9	080/081	Site 40/48	
CE16R6	20	DIP	→ V8	49	3.9	080/080	Site 40/48	
CE16R8	20	DIP	→ V8	49	3.9	080/082	Site 40/48	
<b>Advanced Micro Devices/MMI CE16V8H-25/4 PLCC as:</b>								
CE16L8	20	PLCC	→ V8	49	3.9	080/717	ChipSite	
CE16L8	20	PLCC	→ V8	49	3.9	080/717	PinSite	20 PIN PLCC MB
CE16R4	20	PLCC	→ V8	49	3.9	080/781	ChipSite	
CE16R4	20	PLCC	→ V8	49	3.9	080/781	PinSite	20 PIN PLCC MB
CE16R6	20	PLCC	→ V8	49	3.9	080/780	ChipSite	
CE16R6	20	PLCC	→ V8	49	3.9	080/780	PinSite	20 PIN PLCC MB
CE16R8	20	PLCC	→ V8	49	3.9	080/782	ChipSite	
CE16R8	20	PLCC	→ V8	49	3.9	080/782	PinSite	20 PIN PLCC MB
<b>Advanced Micro Devices/MMI CE20V8H-15/4 DIP as:</b>								
CE20L8	24	DIP	→ V8	49	3.9	080/026	Site 40/48	
CE20R4	24	DIP	→ V8	49	3.9	080/065	Site 40/48	
CE20R6	24	DIP	→ V8	49	3.9	080/066	Site 40/48	
CE20R8	24	DIP	→ V8	49	3.9	080/027	Site 40/48	
<b>Advanced Micro Devices/MMI CE20V8H-15/4 PLCC as:</b>								
CE20L8	28	PLCC	→ V8	49	3.9	080/726	ChipSite	
CE20L8	28	PLCC	→ V8	49	3.9	080/726	PinSite	28 PIN PLCC MB
CE20R4	28	PLCC	→ V8	49	3.9	080/765	ChipSite	
CE20R4	28	PLCC	→ V8	49	3.9	080/765	PinSite	28 PIN PLCC MB
CE20R6	28	PLCC	→ V8	49	3.9	080/766	ChipSite	
CE20R6	28	PLCC	→ V8	49	3.9	080/766	PinSite	28 PIN PLCC MB
CE20R8	28	PLCC	→ V8	49	3.9	080/727	ChipSite	
CE20R8	28	PLCC	→ V8	49	3.9	080/727	PinSite	28 PIN PLCC MB
<b>Intel Corporation 85C220 DIP as:</b>								
16V8	20	DIP	XPLD		3.8	218/243	Site 40/48	
<b>Intel Corporation 85C220 PLCC as:</b>								
16V8	20	PLCC	XPLD		3.8	218/943	ChipSite	
16V8	20	PLCC	XPLD		3.8	218/943	PinSite	20 PIN PLCC MB
<b>Intel Corporation 85C224 DIP as:</b>								
20V8	24	DIP	XPLD		3.8	219/244	Site 40/48	
<b>Intel Corporation 85C224 PLCC as:</b>								
20V8	28	PLCC	XPLD		3.8	219/944	ChipSite	
20V8	28	PLCC	XPLD		3.8	219/944	PinSite	28 PIN PLCC MB
<b>Intel Corporation 85C22V10 DIP as:</b>								
22V10	24	DIP	XPLD		3.7	2DB/229	Site 40/48	
22V10UES	24	DIP	XPLD		3.7	2DB/22B	Site 40/48	
22VP10	24	DIP	XPLD		3.7	2DB/22A	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Intel Corporation 85C22V10 PLCC as:</b>								
22V10	28	PLCC	XPLD		3.7	2DB/529	ChipSite	
22V10	28	PLCC	XPLD		3.7	2DB/529	PinSite	28 PIN PLCC MB
22V10UES	28	PLCC	XPLD		3.7	2DB/52B	ChipSite	
22V10UES	28	PLCC	XPLD		3.7	2DB/52B	PinSite	28 PIN PLCC MB
22VP10	28	PLCC	XPLD		3.7	2DB/52A	ChipSite	
22VP10	28	PLCC	XPLD		3.7	2DB/52A	PinSite	28 PIN PLCC MB
<b>Intel Corporation IPLD16V8XP DIP as:</b>								
16V8	20	DIP	XPLD		3.8	218/243	Site 40/48	
<b>Intel Corporation IPLD16V8XP PLCC as:</b>								
16V8	20	PLCC	XPLD		3.8	218/943	ChipSite	
16V8	20	PLCC	XPLD		3.8	218/943	PinSite	20 PIN PLCC MB
<b>Intel Corporation IPLD20V8XP DIP as:</b>								
20V8	24	DIP	XPLD		3.8	219/244	Site 40/48	
<b>Intel Corporation IPLD20V8XP PLCC as:</b>								
20V8	28	PLCC	XPLD		3.8	219/944	ChipSite	
20V8	28	PLCC	XPLD		3.8	219/944	PinSite	28 PIN PLCC MB
<b>Lattice Semiconductor 16V8 DIP as:</b>								
10H8	20	DIP	RAL	33,49	3.6	36/18	Site 40/48	
10L8	20	DIP	RAL	33,49	3.6	36/13	Site 40/48	
10P8	20	DIP	RAL	33,49	3.6	36/32	Site 40/48	
12H6	20	DIP	RAL	33,49	3.6	36/19	Site 40/48	
12L6	20	DIP	RAL	33,49	3.6	36/14	Site 40/48	
12P6	20	DIP	RAL	33,49	3.6	36/33	Site 40/48	
14H4	20	DIP	RAL	33,49	3.6	36/20	Site 40/48	
14L4	20	DIP	RAL	33,49	3.6	36/15	Site 40/48	
14P4	20	DIP	RAL	33,49	3.6	36/34	Site 40/48	
16H2	20	DIP	RAL	33,49	3.6	36/22	Site 40/48	
16H8	20	DIP	RAL	33,49	3.6	36/25	Site 40/48	
16L2	20	DIP	RAL	33,49	3.6	36/16	Site 40/48	
16L8	20	DIP	RAL	33,49	3.6	36/17	Site 40/48	
16P2	20	DIP	RAL	33,49	3.6	36/35	Site 40/48	
16P8	20	DIP	RAL	33,49	3.6	36/30	Site 40/48	
16R4	20	DIP	RAL	33,49	3.6	36/81	Site 40/48	
16R6	20	DIP	RAL	33,49	3.6	36/80	Site 40/48	
16R8	20	DIP	RAL	33,49	3.6	36/82	Site 40/48	
16RP4	20	DIP	RAL	33,49	3.6	36/85	Site 40/48	
16RP6	20	DIP	RAL	33,49	3.6	36/86	Site 40/48	
16RP8	20	DIP	RAL	33,49	3.6	36/87	Site 40/48	
<b>Lattice Semiconductor 16V8 PLCC as:</b>								
10H8	20	PLCC	RAL	33,49	3.6	036/718	ChipSite	
10H8	20	PLCC	RAL	33,49	3.6	036/718	PinSite	20 PIN PLCC MB
10L8	20	PLCC	RAL	33,49	3.6	036/713	ChipSite	
10L8	20	PLCC	RAL	33,49	3.6	036/713	PinSite	20 PIN PLCC MB
10P8	20	PLCC	RAL	33,49	3.6	036/732	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor 16V8 PLCC as: (continued)</b>								
10P8	20	PLCC	RAL	33,49	3.6	036/732	PinSite	20 PIN PLCC MB
12H6	20	PLCC	RAL	33,49	3.6	036/719	ChipSite	
12H6	20	PLCC	RAL	33,49	3.6	036/719	PinSite	20 PIN PLCC MB
12L6	20	PLCC	RAL	33,49	3.6	036/714	ChipSite	
12L6	20	PLCC	RAL	33,49	3.6	036/714	PinSite	20 PIN PLCC MB
12P6	20	PLCC	RAL	33,49	3.6	036/733	ChipSite	
12P6	20	PLCC	RAL	33,49	3.6	036/733	PinSite	20 PIN PLCC MB
14H4	20	PLCC	RAL	33,49	3.6	036/720	ChipSite	
14H4	20	PLCC	RAL	33,49	3.6	036/720	PinSite	20 PIN PLCC MB
14L4	20	PLCC	RAL	33,49	3.6	036/715	ChipSite	
14L4	20	PLCC	RAL	33,49	3.6	036/715	PinSite	20 PIN PLCC MB
14P4	20	PLCC	RAL	33,49	3.6	036/734	ChipSite	
14P4	20	PLCC	RAL	33,49	3.6	036/734	PinSite	20 PIN PLCC MB
16H2	20	PLCC	RAL	33,49	3.6	036/722	ChipSite	
16H2	20	PLCC	RAL	33,49	3.6	036/722	PinSite	20 PIN PLCC MB
16H8	20	PLCC	RAL	33,49	3.6	036/725	ChipSite	
16H8	20	PLCC	RAL	33,49	3.6	036/725	PinSite	20 PIN PLCC MB
16L2	20	PLCC	RAL	33,49	3.6	036/716	ChipSite	
16L2	20	PLCC	RAL	33,49	3.6	036/716	PinSite	20 PIN PLCC MB
16L8	20	PLCC	RAL	33,49	3.6	036/717	ChipSite	
16L8	20	PLCC	RAL	33,49	3.6	036/717	PinSite	20 PIN PLCC MB
16P2	20	PLCC	RAL	33,49	3.6	036/735	ChipSite	
16P2	20	PLCC	RAL	33,49	3.6	036/735	PinSite	20 PIN PLCC MB
16P8	20	PLCC	RAL	33,49	3.6	036/730	ChipSite	
16P8	20	PLCC	RAL	33,49	3.6	036/730	PinSite	20 PIN PLCC MB
16R4	20	PLCC	RAL	33,49	3.6	036/781	ChipSite	
16R4	20	PLCC	RAL	33,49	3.6	036/781	PinSite	20 PIN PLCC MB
16R6	20	PLCC	RAL	33,49	3.6	036/780	ChipSite	
16R6	20	PLCC	RAL	33,49	3.6	036/780	PinSite	20 PIN PLCC MB
16R8	20	PLCC	RAL	33,49	3.6	036/782	ChipSite	
16R8	20	PLCC	RAL	33,49	3.6	036/782	PinSite	20 PIN PLCC MB
16RP4	20	PLCC	RAL	33,49	3.6	036/785	ChipSite	
16RP4	20	PLCC	RAL	33,49	3.6	036/785	PinSite	20 PIN PLCC MB
16RP6	20	PLCC	RAL	33,49	3.6	036/786	ChipSite	
16RP6	20	PLCC	RAL	33,49	3.6	036/786	PinSite	20 PIN PLCC MB
16RP8	20	PLCC	RAL	33,49	3.6	036/787	ChipSite	
16RP8	20	PLCC	RAL	33,49	3.6	036/787	PinSite	20 PIN PLCC MB

**Lattice Semiconductor 16V8A DIP as:**

10H8A	20	DIP	RAL	33,49	3.6	36/18	Site 40/48
10L8A	20	DIP	RAL	33,49	3.6	36/13	Site 40/48
10P8A	20	DIP	RAL	33,49	3.6	36/32	Site 40/48
12H6A	20	DIP	RAL	33,49	3.6	36/19	Site 40/48
12L6A	20	DIP	RAL	33,49	3.6	36/14	Site 40/48
12P6A	20	DIP	RAL	33,49	3.6	36/33	Site 40/48
14H4A	20	DIP	RAL	33,49	3.6	36/20	Site 40/48
14L4A	20	DIP	RAL	33,49	3.6	36/15	Site 40/48
14P4A	20	DIP	RAL	33,49	3.6	36/34	Site 40/48
16H2A	20	DIP	RAL	33,49	3.6	36/22	Site 40/48
16H8A	20	DIP	RAL	33,49	3.6	36/25	Site 40/48
16L2A	20	DIP	RAL	33,49	3.6	36/16	Site 40/48
16L8A	20	DIP	RAL	33,49	3.6	36/17	Site 40/48
16P2A	20	DIP	RAL	33,49	3.6	36/35	Site 40/48
16P8A	20	DIP	RAL	33,49	3.6	36/30	Site 40/48



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor 16V8A DIP as: (continued)</b>								
16R4A	20	DIP	RAL	33,49	3.6	36/81	Site 40/48	
16R6A	20	DIP	RAL	33,49	3.6	36/80	Site 40/48	
16R8A	20	DIP	RAL	33,49	3.6	36/82	Site 40/48	
16RP4A	20	DIP	RAL	33,49	3.6	36/85	Site 40/48	
16RP6A	20	DIP	RAL	33,49	3.6	36/86	Site 40/48	
16RP8A	20	DIP	RAL	33,49	3.6	36/87	Site 40/48	
<b>Lattice Semiconductor 16V8A PLCC as:</b>								
10H8A	20	PLCC	RAL	33,49	3.6	036/718	ChipSite	20 PIN PLCC MB
10H8A	20	PLCC	RAL	33,49	3.6	036/718	PinSite	
10L8A	20	PLCC	RAL	33,49	3.6	036/713	ChipSite	
10L8A	20	PLCC	RAL	33,49	3.6	036/713	PinSite	20 PIN PLCC MB
10P8A	20	PLCC	RAL	33,49	3.6	036/732	ChipSite	
10P8A	20	PLCC	RAL	33,49	3.6	036/732	PinSite	20 PIN PLCC MB
12H6A	20	PLCC	RAL	33,49	3.6	036/719	ChipSite	20 PIN PLCC MB
12H6A	20	PLCC	RAL	33,49	3.6	036/719	PinSite	
12L6A	20	PLCC	RAL	33,49	3.6	036/714	ChipSite	
12L6A	20	PLCC	RAL	33,49	3.6	036/714	PinSite	20 PIN PLCC MB
12P6A	20	PLCC	RAL	33,49	3.6	036/733	ChipSite	20 PIN PLCC MB
12P6A	20	PLCC	RAL	33,49	3.6	036/733	PinSite	
14H4A	20	PLCC	RAL	33,49	3.6	036/720	ChipSite	
14H4A	20	PLCC	RAL	33,49	3.6	036/720	PinSite	20 PIN PLCC MB
14L4A	20	PLCC	RAL	33,49	3.6	036/715	ChipSite	
14L4A	20	PLCC	RAL	33,49	3.6	036/715	PinSite	20 PIN PLCC MB
14P4A	20	PLCC	RAL	33,49	3.6	036/734	ChipSite	20 PIN PLCC MB
14P4A	20	PLCC	RAL	33,49	3.6	036/734	PinSite	
16H2A	20	PLCC	RAL	33,49	3.6	036/722	ChipSite	
16H2A	20	PLCC	RAL	33,49	3.6	036/722	PinSite	20 PIN PLCC MB
16H8A	20	PLCC	RAL	33,49	3.6	036/725	ChipSite	20 PIN PLCC MB
16H8A	20	PLCC	RAL	33,49	3.6	036/725	PinSite	
16L2A	20	PLCC	RAL	33,49	3.6	036/716	ChipSite	
16L2A	20	PLCC	RAL	33,49	3.6	036/716	PinSite	20 PIN PLCC MB
16L8A	20	PLCC	RAL	33,49	3.6	036/717	ChipSite	
16L8A	20	PLCC	RAL	33,49	3.6	036/717	PinSite	20 PIN PLCC MB
16P2A	20	PLCC	RAL	33,49	3.6	036/735	ChipSite	20 PIN PLCC MB
16P2A	20	PLCC	RAL	33,49	3.6	036/735	PinSite	
16P8A	20	PLCC	RAL	33,49	3.6	036/730	ChipSite	
16P8A	20	PLCC	RAL	33,49	3.6	036/730	PinSite	20 PIN PLCC MB
16R4A	20	PLCC	RAL	33,49	3.6	036/781	ChipSite	20 PIN PLCC MB
16R4A	20	PLCC	RAL	33,49	3.6	036/781	PinSite	
16R6A	20	PLCC	RAL	33,49	3.6	036/780	ChipSite	
16R6A	20	PLCC	RAL	33,49	3.6	036/780	PinSite	20 PIN PLCC MB
16R8A	20	PLCC	RAL	33,49	3.6	036/782	ChipSite	
16R8A	20	PLCC	RAL	33,49	3.6	036/782	PinSite	20 PIN PLCC MB
16RP4A	20	PLCC	RAL	33,49	3.6	036/785	ChipSite	20 PIN PLCC MB
16RP4A	20	PLCC	RAL	33,49	3.6	036/785	PinSite	
16RP6A	20	PLCC	RAL	33,49	3.6	036/786	ChipSite	
16RP6A	20	PLCC	RAL	33,49	3.6	036/786	PinSite	20 PIN PLCC MB
16RP8A	20	PLCC	RAL	33,49	3.6	036/787	ChipSite	20 PIN PLCC MB
16RP8A	20	PLCC	RAL	33,49	3.6	036/787	PinSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor 16V8B DIP as:</b>								
10H8B	20	DIP	RAL	33,49	3.6	36/18	Site 40/48	
10L8B	20	DIP	RAL	33,49	3.6	36/13	Site 40/48	
10P8B	20	DIP	RAL	33,49	3.6	36/32	Site 40/48	
12H6B	20	DIP	RAL	33,49	3.6	36/19	Site 40/48	
12L6B	20	DIP	RAL	33,49	3.6	36/14	Site 40/48	
12P6B	20	DIP	RAL	33,49	3.6	36/33	Site 40/48	
14H4B	20	DIP	RAL	33,49	3.6	36/20	Site 40/48	
14L4B	20	DIP	RAL	33,49	3.6	36/15	Site 40/48	
14P4B	20	DIP	RAL	33,49	3.6	36/34	Site 40/48	
16H2B	20	DIP	RAL	33,49	3.6	36/22	Site 40/48	
16H8B	20	DIP	RAL	33,49	3.6	36/25	Site 40/48	
16L2B	20	DIP	RAL	33,49	3.6	36/16	Site 40/48	
16L8B	20	DIP	RAL	33,49	3.6	36/17	Site 40/48	
16P2B	20	DIP	RAL	33,49	3.6	36/35	Site 40/48	
16P8B	20	DIP	RAL	33,49	3.6	36/30	Site 40/48	
16R4B	20	DIP	RAL	33,49	3.6	36/81	Site 40/48	
16R6B	20	DIP	RAL	33,49	3.6	36/80	Site 40/48	
16R8B	20	DIP	RAL	33,49	3.6	36/82	Site 40/48	
16RP4B	20	DIP	RAL	33,49	3.6	36/85	Site 40/48	
16RP6B	20	DIP	RAL	33,49	3.6	36/86	Site 40/48	
16RP8B	20	DIP	RAL	33,49	3.6	36/87	Site 40/48	
<b>Lattice Semiconductor 16V8B PLCC as:</b>								
10H8B	20	PLCC	RAL	33,49	3.6	036/718	ChipSite	
10H8B	20	PLCC	RAL	33,49	3.6	036/718	PinSite	20 PIN PLCC MB
10L8B	20	PLCC	RAL	33,49	3.6	036/713	ChipSite	
10L8B	20	PLCC	RAL	33,49	3.6	036/713	PinSite	20 PIN PLCC MB
10P8B	20	PLCC	RAL	33,49	3.6	036/732	ChipSite	
10P8B	20	PLCC	RAL	33,49	3.6	036/732	PinSite	20 PIN PLCC MB
12H6B	20	PLCC	RAL	33,49	3.6	036/719	ChipSite	
12H6B	20	PLCC	RAL	33,49	3.6	036/719	PinSite	20 PIN PLCC MB
12L6B	20	PLCC	RAL	33,49	3.6	036/714	ChipSite	
12L6B	20	PLCC	RAL	33,49	3.6	036/714	PinSite	20 PIN PLCC MB
12P6B	20	PLCC	RAL	33,49	3.6	036/733	ChipSite	
12P6B	20	PLCC	RAL	33,49	3.6	036/733	PinSite	20 PIN PLCC MB
14H4B	20	PLCC	RAL	33,49	3.6	036/720	ChipSite	
14H4B	20	PLCC	RAL	33,49	3.6	036/720	PinSite	20 PIN PLCC MB
14L4B	20	PLCC	RAL	33,49	3.6	036/715	ChipSite	
14L4B	20	PLCC	RAL	33,49	3.6	036/715	PinSite	20 PIN PLCC MB
14P4B	20	PLCC	RAL	33,49	3.6	036/734	ChipSite	
14P4B	20	PLCC	RAL	33,49	3.6	036/734	PinSite	20 PIN PLCC MB
16H2B	20	PLCC	RAL	33,49	3.6	036/722	ChipSite	
16H2B	20	PLCC	RAL	33,49	3.6	036/722	PinSite	20 PIN PLCC MB
16H8B	20	PLCC	RAL	33,49	3.6	036/725	ChipSite	
16H8B	20	PLCC	RAL	33,49	3.6	036/725	PinSite	20 PIN PLCC MB
16L2B	20	PLCC	RAL	33,49	3.6	036/716	ChipSite	
16L2B	20	PLCC	RAL	33,49	3.6	036/716	PinSite	20 PIN PLCC MB
16L8B	20	PLCC	RAL	33,49	3.6	036/717	ChipSite	
16L8B	20	PLCC	RAL	33,49	3.6	036/717	PinSite	20 PIN PLCC MB
16P2B	20	PLCC	RAL	33,49	3.6	036/735	ChipSite	
16P2B	20	PLCC	RAL	33,49	3.6	036/735	PinSite	20 PIN PLCC MB
16P8B	20	PLCC	RAL	33,49	3.6	036/730	ChipSite	
16P8B	20	PLCC	RAL	33,49	3.6	036/730	PinSite	20 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
Lattice Semiconductor 16V8B PLCC as: (continued)								
16R4B	20	PLCC	RAL	33,49	3.6	036/781	ChipSite	20 PIN PLCC MB
16R4B	20	PLCC	RAL	33,49	3.6	036/781	PinSite	
16R6B	20	PLCC	RAL	33,49	3.6	036/780	ChipSite	20 PIN PLCC MB
16R6B	20	PLCC	RAL	33,49	3.6	036/780	PinSite	
16R8B	20	PLCC	RAL	33,49	3.6	036/782	ChipSite	20 PIN PLCC MB
16R8B	20	PLCC	RAL	33,49	3.6	036/782	PinSite	
16RP4B	20	PLCC	RAL	33,49	3.6	036/785	ChipSite	20 PIN PLCC MB
16RP4B	20	PLCC	RAL	33,49	3.6	036/785	PinSite	
16RP6B	20	PLCC	RAL	33,49	3.6	036/786	ChipSite	20 PIN PLCC MB
16RP6B	20	PLCC	RAL	33,49	3.6	036/786	PinSite	
16RP8B	20	PLCC	RAL	33,49	3.6	036/787	ChipSite	20 PIN PLCC MB
16RP8B	20	PLCC	RAL	33,49	3.6	036/787	PinSite	
Lattice Semiconductor 20V8 DIP as:								
14H8	24	DIP	RAL	33,49	3.6	36/08	Site 40/48	Site 40/48
14L8	24	DIP	RAL	33,49	3.6	36/02	Site 40/48	
14P8	24	DIP	RAL	33,49	3.6	36/38	Site 40/48	Site 40/48
16H6	24	DIP	RAL	33,49	3.6	36/09	Site 40/48	
16L6	24	DIP	RAL	33,49	3.6	36/03	Site 40/48	Site 40/48
16P6	24	DIP	RAL	33,49	3.6	36/39	Site 40/48	
18H4	24	DIP	RAL	33,49	3.6	36/10	Site 40/48	Site 40/48
18L4	24	DIP	RAL	33,49	3.6	36/04	Site 40/48	
18P4	24	DIP	RAL	33,49	3.6	36/40	Site 40/48	Site 40/48
20H2	24	DIP	RAL	33,49	3.6	36/11	Site 40/48	
20H8	24	DIP	RAL	33,49	3.6	36/61	Site 40/48	Site 40/48
20L2	24	DIP	RAL	33,49	3.6	36/05	Site 40/48	
20L8	24	DIP	RAL	33,49	3.6	36/26	Site 40/48	Site 40/48
20P2	24	DIP	RAL	33,49	3.6	36/41	Site 40/48	
20P8	24	DIP	RAL	33,49	3.6	36/62	Site 40/48	Site 40/48
20R4	24	DIP	RAL	33,49	3.6	36/65	Site 40/48	
20R6	24	DIP	RAL	33,49	3.6	36/66	Site 40/48	Site 40/48
20R8	24	DIP	RAL	33,49	3.6	36/27	Site 40/48	
20RP4	24	DIP	RAL	33,49	3.6	36/46	Site 40/48	Site 40/48
20RP6	24	DIP	RAL	33,49	3.6	36/64	Site 40/48	
20RP8	24	DIP	RAL	33,49	3.6	36/63	Site 40/48	Site 40/48
Lattice Semiconductor 20V8 PLCC as:								
14H8	28	PLCC	RAL	33,49	3.6	036/708	ChipSite	28 PIN PLCC MB
14H8	28	PLCC	RAL	33,49	3.6	036/708	PinSite	
14L8	28	PLCC	RAL	33,49	3.6	036/702	ChipSite	28 PIN PLCC MB
14L8	28	PLCC	RAL	33,49	3.6	036/702	PinSite	
14P8	28	PLCC	RAL	33,49	3.6	036/738	ChipSite	28 PIN PLCC MB
14P8	28	PLCC	RAL	33,49	3.6	036/738	PinSite	
16H6	28	PLCC	RAL	33,49	3.6	036/709	ChipSite	28 PIN PLCC MB
16H6	28	PLCC	RAL	33,49	3.6	036/709	PinSite	
16L6	28	PLCC	RAL	33,49	3.6	036/703	ChipSite	28 PIN PLCC MB
16L6	28	PLCC	RAL	33,49	3.6	036/703	PinSite	
16P6	28	PLCC	RAL	33,49	3.6	036/739	ChipSite	28 PIN PLCC MB
16P6	28	PLCC	RAL	33,49	3.6	036/739	PinSite	
18H4	28	PLCC	RAL	33,49	3.6	036/710	ChipSite	28 PIN PLCC MB
18H4	28	PLCC	RAL	33,49	3.6	036/710	PinSite	
18L4	28	PLCC	RAL	33,49	3.6	036/704	ChipSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family / Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor 20V8 PLCC as: (continued)</b>								
18L4	28	PLCC	RAL	33,49	3.6	036/704	PinSite	28 PIN PLCC MB
18P4	28	PLCC	RAL	33,49	3.6	036/740	ChipSite	
18P4	28	PLCC	RAL	33,49	3.6	036/740	PinSite	28 PIN PLCC MB
20H2	28	PLCC	RAL	33,49	3.6	036/711	ChipSite	
20H2	28	PLCC	RAL	33,49	3.6	036/711	PinSite	28 PIN PLCC MB
20H8	28	PLCC	RAL	33,49	3.6	036/761	ChipSite	
20H8	28	PLCC	RAL	33,49	3.6	036/761	PinSite	28 PIN PLCC MB
20L2	28	PLCC	RAL	33,49	3.6	036/705	ChipSite	
20L2	28	PLCC	RAL	33,49	3.6	036/705	PinSite	28 PIN PLCC MB
20L8	28	PLCC	RAL	33,49	3.6	036/726	ChipSite	
20L8	28	PLCC	RAL	33,49	3.6	036/726	PinSite	28 PIN PLCC MB
20P2	28	PLCC	RAL	33,49	3.6	036/741	ChipSite	
20P2	28	PLCC	RAL	33,49	3.6	036/741	PinSite	28 PIN PLCC MB
20P8	28	PLCC	RAL	33,49	3.6	036/762	ChipSite	
20P8	28	PLCC	RAL	33,49	3.6	036/762	PinSite	28 PIN PLCC MB
20R4	28	PLCC	RAL	33,49	3.6	036/765	ChipSite	
20R4	28	PLCC	RAL	33,49	3.6	036/765	PinSite	28 PIN PLCC MB
20R6	28	PLCC	RAL	33,49	3.6	036/766	ChipSite	
20R6	28	PLCC	RAL	33,49	3.6	036/766	PinSite	28 PIN PLCC MB
20R8	28	PLCC	RAL	33,49	3.6	036/727	ChipSite	
20R8	28	PLCC	RAL	33,49	3.6	036/727	PinSite	28 PIN PLCC MB
20RP4	28	PLCC	RAL	33,49	3.6	036/746	ChipSite	
20RP4	28	PLCC	RAL	33,49	3.6	036/746	PinSite	28 PIN PLCC MB
20RP6	28	PLCC	RAL	33,49	3.6	036/764	ChipSite	
20RP6	28	PLCC	RAL	33,49	3.6	036/764	PinSite	28 PIN PLCC MB
20RP8	28	PLCC	RAL	33,49	3.6	036/763	ChipSite	
20RP8	28	PLCC	RAL	33,49	3.6	036/763	PinSite	28 PIN PLCC MB
<b>Lattice Semiconductor 20V8A DIP as:</b>								
14H8A	24	DIP	RAL	33,49	3.6	36/08	Site 40/48	
14L8A	24	DIP	RAL	33,49	3.6	36/02	Site 40/48	
14P8A	24	DIP	RAL	33,49	3.6	36/38	Site 40/48	
16H6A	24	DIP	RAL	33,49	3.6	36/09	Site 40/48	
16L6A	24	DIP	RAL	33,49	3.6	36/03	Site 40/48	
16P6A	24	DIP	RAL	33,49	3.6	36/39	Site 40/48	
18H4A	24	DIP	RAL	33,49	3.6	36/10	Site 40/48	
18L4A	24	DIP	RAL	33,49	3.6	36/04	Site 40/48	
18P4A	24	DIP	RAL	33,49	3.6	36/40	Site 40/48	
20H2A	24	DIP	RAL	33,49	3.6	36/11	Site 40/48	
20H8A	24	DIP	RAL	33,49	3.6	36/61	Site 40/48	
20L2A	24	DIP	RAL	33,49	3.6	36/05	Site 40/48	
20L8A	24	DIP	RAL	33,49	3.6	36/26	Site 40/48	
20P2A	24	DIP	RAL	33,49	3.6	36/41	Site 40/48	
20P8A	24	DIP	RAL	33,49	3.6	36/62	Site 40/48	
20R4A	24	DIP	RAL	33,49	3.6	36/65	Site 40/48	
20R6A	24	DIP	RAL	33,49	3.6	36/66	Site 40/48	
20R8A	24	DIP	RAL	33,49	3.6	36/27	Site 40/48	
20RP4A	24	DIP	RAL	33,49	3.6	36/46	Site 40/48	
20RP6A	24	DIP	RAL	33,49	3.6	36/64	Site 40/48	
20RP8A	24	DIP	RAL	33,49	3.6	36/63	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor 20V8A PLCC as:</b>								
14H8A	28	PLCC	RAL	33,49	3.6	036/708	ChipSite	28 PIN PLCC MB
14H8A	28	PLCC	RAL	33,49	3.6	036/708	PinSite	
14L8A	28	PLCC	RAL	33,49	3.6	036/702	ChipSite	28 PIN PLCC MB
14L8A	28	PLCC	RAL	33,49	3.6	036/702	PinSite	
14P8A	28	PLCC	RAL	33,49	3.6	036/738	ChipSite	28 PIN PLCC MB
14P8A	28	PLCC	RAL	33,49	3.6	036/738	PinSite	
16H6A	28	PLCC	RAL	33,49	3.6	036/709	ChipSite	28 PIN PLCC MB
16H6A	28	PLCC	RAL	33,49	3.6	036/709	PinSite	
16L6A	28	PLCC	RAL	33,49	3.6	036/703	ChipSite	28 PIN PLCC MB
16L6A	28	PLCC	RAL	33,49	3.6	036/703	PinSite	
16P6A	28	PLCC	RAL	33,49	3.6	036/739	ChipSite	28 PIN PLCC MB
16P6A	28	PLCC	RAL	33,49	3.6	036/739	PinSite	
18H4A	28	PLCC	RAL	33,49	3.6	036/710	ChipSite	28 PIN PLCC MB
18H4A	28	PLCC	RAL	33,49	3.6	036/710	PinSite	
18L4A	28	PLCC	RAL	33,49	3.6	036/704	ChipSite	28 PIN PLCC MB
18L4A	28	PLCC	RAL	33,49	3.6	036/704	PinSite	
18P4A	28	PLCC	RAL	33,49	3.6	036/740	ChipSite	28 PIN PLCC MB
18P4A	28	PLCC	RAL	33,49	3.6	036/740	PinSite	
20H2A	28	PLCC	RAL	33,49	3.6	036/711	ChipSite	28 PIN PLCC MB
20H2A	28	PLCC	RAL	33,49	3.6	036/711	PinSite	
20H8A	28	PLCC	RAL	33,49	3.6	036/761	ChipSite	28 PIN PLCC MB
20H8A	28	PLCC	RAL	33,49	3.6	036/761	PinSite	
20L2A	28	PLCC	RAL	33,49	3.6	036/705	ChipSite	28 PIN PLCC MB
20L2A	28	PLCC	RAL	33,49	3.6	036/705	PinSite	
20L8A	28	PLCC	RAL	33,49	3.6	036/726	ChipSite	28 PIN PLCC MB
20L8A	28	PLCC	RAL	33,49	3.6	036/726	PinSite	
20P2A	28	PLCC	RAL	33,49	3.6	036/741	ChipSite	28 PIN PLCC MB
20P2A	28	PLCC	RAL	33,49	3.6	036/741	PinSite	
20P8A	28	PLCC	RAL	33,49	3.6	036/762	ChipSite	28 PIN PLCC MB
20P8A	28	PLCC	RAL	33,49	3.6	036/762	PinSite	
20R4A	28	PLCC	RAL	33,49	3.6	036/765	ChipSite	28 PIN PLCC MB
20R4A	28	PLCC	RAL	33,49	3.6	036/765	PinSite	
20R6A	28	PLCC	RAL	33,49	3.6	036/766	ChipSite	28 PIN PLCC MB
20R6A	28	PLCC	RAL	33,49	3.6	036/766	PinSite	
20R8A	28	PLCC	RAL	33,49	3.6	036/727	ChipSite	28 PIN PLCC MB
20R8A	28	PLCC	RAL	33,49	3.6	036/727	PinSite	
20RP4A	28	PLCC	RAL	33,49	3.6	036/746	ChipSite	28 PIN PLCC MB
20RP4A	28	PLCC	RAL	33,49	3.6	036/746	PinSite	
20RP6A	28	PLCC	RAL	33,49	3.6	036/764	ChipSite	28 PIN PLCC MB
20RP6A	28	PLCC	RAL	33,49	3.6	036/764	PinSite	
20RP8A	28	PLCC	RAL	33,49	3.6	036/763	ChipSite	28 PIN PLCC MB
20RP8A	28	PLCC	RAL	33,49	3.6	036/763	PinSite	

**Lattice Semiconductor 20V8B DIP as:**

14H8B	24	DIP	RAL	33,49	3.6	36/08	Site 40/48
14L8B	24	DIP	RAL	33,49	3.6	36/02	Site 40/48
14P8B	24	DIP	RAL	33,49	3.6	36/38	Site 40/48
16H6B	24	DIP	RAL	33,49	3.6	36/09	Site 40/48
16L6B	24	DIP	RAL	33,49	3.6	36/03	Site 40/48
16P6B	24	DIP	RAL	33,49	3.6	36/39	Site 40/48
18H4B	24	DIP	RAL	33,49	3.6	36/10	Site 40/48
18L4B	24	DIP	RAL	33,49	3.6	36/04	Site 40/48
18P4B	24	DIP	RAL	33,49	3.6	36/40	Site 40/48
20H2B	24	DIP	RAL	33,49	3.6	36/11	Site 40/48

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family / Pinout Code	Module	MatchBook/ Adapter
<b>Lattice Semiconductor 20V8B DIP as: (continued)</b>								
20H8B	24	DIP	RAL	33,49	3.6	36/61	Site 40/48	
20L2B	24	DIP	RAL	33,49	3.6	36/05	Site 40/48	
20L8B	24	DIP	RAL	33,49	3.6	36/26	Site 40/48	
20P2B	24	DIP	RAL	33,49	3.6	36/41	Site 40/48	
20P8B	24	DIP	RAL	33,49	3.6	36/62	Site 40/48	
20R4B	24	DIP	RAL	33,49	3.6	36/65	Site 40/48	
20R6B	24	DIP	RAL	33,49	3.6	36/66	Site 40/48	
20R8B	24	DIP	RAL	33,49	3.6	36/27	Site 40/48	
20RP4B	24	DIP	RAL	33,49	3.6	36/46	Site 40/48	
20RP6B	24	DIP	RAL	33,49	3.6	36/64	Site 40/48	
20RP8B	24	DIP	RAL	33,49	3.6	36/63	Site 40/48	
<b>Lattice Semiconductor 20V8B PLCC as:</b>								
14H8B	28	PLCC	RAL	33,49	3.6	036/708	ChipSite	
14H8B	28	PLCC	RAL	33,49	3.6	036/708	PinSite	28 PIN PLCC MB
14L8B	28	PLCC	RAL	33,49	3.6	036/702	ChipSite	
14L8B	28	PLCC	RAL	33,49	3.6	036/702	PinSite	28 PIN PLCC MB
14P8B	28	PLCC	RAL	33,49	3.6	036/738	ChipSite	
14P8B	28	PLCC	RAL	33,49	3.6	036/738	PinSite	28 PIN PLCC MB
16H6B	28	PLCC	RAL	33,49	3.6	036/709	ChipSite	
16H6B	28	PLCC	RAL	33,49	3.6	036/709	PinSite	28 PIN PLCC MB
16L6B	28	PLCC	RAL	33,49	3.6	036/703	ChipSite	
16L6B	28	PLCC	RAL	33,49	3.6	036/703	PinSite	28 PIN PLCC MB
16P6B	28	PLCC	RAL	33,49	3.6	036/739	ChipSite	
16P6B	28	PLCC	RAL	33,49	3.6	036/739	PinSite	28 PIN PLCC MB
18H4B	28	PLCC	RAL	33,49	3.6	036/710	ChipSite	
18H4B	28	PLCC	RAL	33,49	3.6	036/710	PinSite	28 PIN PLCC MB
18L4B	28	PLCC	RAL	33,49	3.6	036/704	ChipSite	
18L4B	28	PLCC	RAL	33,49	3.6	036/704	PinSite	28 PIN PLCC MB
18P4B	28	PLCC	RAL	33,49	3.6	036/740	ChipSite	
18P4B	28	PLCC	RAL	33,49	3.6	036/740	PinSite	28 PIN PLCC MB
20H2B	28	PLCC	RAL	33,49	3.6	036/711	ChipSite	
20H2B	28	PLCC	RAL	33,49	3.6	036/711	PinSite	28 PIN PLCC MB
20H8B	28	PLCC	RAL	33,49	3.6	036/761	ChipSite	
20H8B	28	PLCC	RAL	33,49	3.6	036/761	PinSite	28 PIN PLCC MB
20L2B	28	PLCC	RAL	33,49	3.6	036/705	ChipSite	
20L2B	28	PLCC	RAL	33,49	3.6	036/705	PinSite	28 PIN PLCC MB
20L8B	28	PLCC	RAL	33,49	3.6	036/726	ChipSite	
20L8B	28	PLCC	RAL	33,49	3.6	036/726	PinSite	28 PIN PLCC MB
20P2B	28	PLCC	RAL	33,49	3.6	036/741	ChipSite	
20P2B	28	PLCC	RAL	33,49	3.6	036/741	PinSite	28 PIN PLCC MB
20P8B	28	PLCC	RAL	33,49	3.6	036/762	ChipSite	
20P8B	28	PLCC	RAL	33,49	3.6	036/762	PinSite	28 PIN PLCC MB
20R4B	28	PLCC	RAL	33,49	3.6	036/765	ChipSite	
20R4B	28	PLCC	RAL	33,49	3.6	036/765	PinSite	28 PIN PLCC MB
20R6B	28	PLCC	RAL	33,49	3.6	036/766	ChipSite	
20R6B	28	PLCC	RAL	33,49	3.6	036/766	PinSite	28 PIN PLCC MB
20R8B	28	PLCC	RAL	33,49	3.6	036/727	ChipSite	
20R8B	28	PLCC	RAL	33,49	3.6	036/727	PinSite	28 PIN PLCC MB
20RP4B	28	PLCC	RAL	33,49	3.6	036/746	ChipSite	
20RP4B	28	PLCC	RAL	33,49	3.6	036/746	PinSite	28 PIN PLCC MB
20RP6B	28	PLCC	RAL	33,49	3.6	036/764	ChipSite	
20RP6B	28	PLCC	RAL	33,49	3.6	036/764	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
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**Lattice Semiconductor 20V8B PLCC as: (continued)**

20RP8B	28	PLCC	RAL	33,49	3.6	036/763	ChipSite	28 PIN PLCC MB
20RP8B	28	PLCC	RAL	33,49	3.6	036/763	PinSite	

**National Semiconductor Corp. 16V8 DIP as:**

10H8	20	DIP	RAL	33,49	2.2	0D/18	Site 40/48	
10L8	20	DIP	RAL	33,49	2.2	0D/13	Site 40/48	
10P8	20	DIP	RAL	33,49	2.2	0D/32	Site 40/48	
12H6	20	DIP	RAL	33,49	2.2	0D/19	Site 40/48	
12L6	20	DIP	RAL	33,49	2.2	0D/14	Site 40/48	
12P6	20	DIP	RAL	33,49	2.2	0D/33	Site 40/48	
14H4	20	DIP	RAL	33,49	2.2	0D/20	Site 40/48	
14L4	20	DIP	RAL	33,49	2.2	0D/15	Site 40/48	
14P4	20	DIP	RAL	33,49	2.2	0D/34	Site 40/48	
16H2	20	DIP	RAL	33,49	2.2	0D/22	Site 40/48	
16H8	20	DIP	RAL	33,49	2.2	0D/25	Site 40/48	
16L2	20	DIP	RAL	33,49	2.2	0D/16	Site 40/48	
16L8	20	DIP	RAL	33,49	2.2	0D/17	Site 40/48	
16P2	20	DIP	RAL	33,49	2.2	0D/35	Site 40/48	
16P8	20	DIP	RAL	33,49	2.2	0D/30	Site 40/48	
16R4	20	DIP	RAL	33,49	2.2	0D/81	Site 40/48	
16R6	20	DIP	RAL	33,49	2.2	0D/80	Site 40/48	
16R8	20	DIP	RAL	33,49	2.2	0D/82	Site 40/48	
16RP4	20	DIP	RAL	33,49	2.2	0D/85	Site 40/48	
16RP6	20	DIP	RAL	33,49	2.2	0D/86	Site 40/48	
16RP8	20	DIP	RAL	33,49	2.2	0D/87	Site 40/48	

**National Semiconductor Corp. 16V8 PLCC as:**

10H8	20	PLCC	RAL	33,49	2.2	00D/718	ChipSite	20 PIN PLCC MB
10H8	20	PLCC	RAL	33,49	3.0	00D/718	PinSite	
10L8	20	PLCC	RAL	33,49	2.2	00D/713	ChipSite	20 PIN PLCC MB
10L8	20	PLCC	RAL	33,49	3.0	00D/713	PinSite	
10P8	20	PLCC	RAL	33,49	2.2	00D/732	ChipSite	
10P8	20	PLCC	RAL	33,49	3.0	00D/732	PinSite	20 PIN PLCC MB
12H6	20	PLCC	RAL	33,49	2.2	00D/719	ChipSite	20 PIN PLCC MB
12H6	20	PLCC	RAL	33,49	3.0	00D/719	PinSite	
12L6	20	PLCC	RAL	33,49	2.2	00D/714	ChipSite	20 PIN PLCC MB
12L6	20	PLCC	RAL	33,49	3.0	00D/714	PinSite	
12P6	20	PLCC	RAL	33,49	2.2	00D/733	ChipSite	20 PIN PLCC MB
12P6	20	PLCC	RAL	33,49	3.0	00D/733	PinSite	
14H4	20	PLCC	RAL	33,49	2.2	00D/720	ChipSite	20 PIN PLCC MB
14H4	20	PLCC	RAL	33,49	3.0	00D/720	PinSite	
14L4	20	PLCC	RAL	33,49	2.2	00D/715	ChipSite	
14L4	20	PLCC	RAL	33,49	3.0	00D/715	PinSite	20 PIN PLCC MB
14P4	20	PLCC	RAL	33,49	2.2	00D/734	ChipSite	20 PIN PLCC MB
14P4	20	PLCC	RAL	33,49	3.0	00D/734	PinSite	
16H2	20	PLCC	RAL	33,49	2.2	00D/722	ChipSite	20 PIN PLCC MB
16H2	20	PLCC	RAL	33,49	3.0	00D/722	PinSite	
16H8	20	PLCC	RAL	33,49	2.3	00D/725	ChipSite	20 PIN PLCC MB
16H8	20	PLCC	RAL	33,49	3.0	00D/725	PinSite	
16L2	20	PLCC	RAL	33,49	2.2	00D/716	ChipSite	20 PIN PLCC MB
16L2	20	PLCC	RAL	33,49	3.0	00D/716	PinSite	
16L8	20	PLCC	RAL	33,49	2.2	00D/717	ChipSite	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. 16V8 PLCC as: (continued)</b>								
16L8	20	PLCC	RAL	33,49	3.0	00D/717	PinSite	20 PIN PLCC MB
16P2	20	PLCC	RAL	33,49	2.2	00D/735	ChipSite	
16P2	20	PLCC	RAL	33,49	3.0	00D/735	PinSite	20 PIN PLCC MB
16P8	20	PLCC	RAL	33,49	2.2	00D/730	ChipSite	
16P8	20	PLCC	RAL	33,49	3.0	00D/730	PinSite	20 PIN PLCC MB
16R4	20	PLCC	RAL	33,49	2.2	00D/781	ChipSite	
16R4	20	PLCC	RAL	33,49	3.0	00D/781	PinSite	20 PIN PLCC MB
16R6	20	PLCC	RAL	33,49	2.2	00D/780	ChipSite	
16R6	20	PLCC	RAL	33,49	3.0	00D/780	PinSite	20 PIN PLCC MB
16R8	20	PLCC	RAL	33,49	2.2	00D/782	ChipSite	
16R8	20	PLCC	RAL	33,49	3.0	00D/782	PinSite	20 PIN PLCC MB
16RP4	20	PLCC	RAL	33,49	2.2	00D/785	ChipSite	
16RP4	20	PLCC	RAL	33,49	3.0	00D/785	PinSite	20 PIN PLCC MB
16RP6	20	PLCC	RAL	33,49	2.2	00D/786	ChipSite	
16RP6	20	PLCC	RAL	33,49	3.0	00D/786	PinSite	20 PIN PLCC MB
16RP8	20	PLCC	RAL	33,49	2.2	00D/787	ChipSite	
16RP8	20	PLCC	RAL	33,49	3.0	00D/787	PinSite	20 PIN PLCC MB
<b>National Semiconductor Corp. 16V8/A/QS DIP as:</b>								
10H8A	20	DIP	RAL	33,49	2.5	0D/18	Site 40/48	
10L8A	20	DIP	RAL	33,49	2.5	0D/13	Site 40/48	
10P8A	20	DIP	RAL	33,49	2.5	0D/32	Site 40/48	
12H6A	20	DIP	RAL	33,49	2.5	0D/19	Site 40/48	
12L6A	20	DIP	RAL	33,49	2.5	0D/14	Site 40/48	
12P6A	20	DIP	RAL	33,49	2.5	0D/33	Site 40/48	
14H4A	20	DIP	RAL	33,49	2.5	0D/20	Site 40/48	
14L4A	20	DIP	RAL	33,49	2.5	0D/15	Site 40/48	
14P4A	20	DIP	RAL	33,49	2.5	0D/34	Site 40/48	
16H2A	20	DIP	RAL	33,49	2.5	0D/22	Site 40/48	
16H8A	20	DIP	RAL	33,49	2.5	0D/25	Site 40/48	
16L2A	20	DIP	RAL	33,49	2.5	0D/16	Site 40/48	
16L8A	20	DIP	RAL	33,49	2.5	0D/17	Site 40/48	
16P2A	20	DIP	RAL	33,49	2.5	0D/35	Site 40/48	
16P8A	20	DIP	RAL	33,49	2.5	0D/30	Site 40/48	
16R4A	20	DIP	RAL	33,49	2.5	0D/81	Site 40/48	
16R6A	20	DIP	RAL	33,49	2.5	0D/80	Site 40/48	
16R8A	20	DIP	RAL	33,49	2.5	0D/82	Site 40/48	
16RP4A	20	DIP	RAL	33,49	2.5	0D/85	Site 40/48	
16RP6A	20	DIP	RAL	33,49	2.5	0D/86	Site 40/48	
16RP8A	20	DIP	RAL	33,49	2.5	0D/87	Site 40/48	
<b>National Semiconductor Corp. 20V8 DIP as:</b>								
14H8	24	DIP	RAL	33,49	2.2	0D/08	Site 40/48	
14L8	24	DIP	RAL	33,49	2.2	0D/02	Site 40/48	
14P8	24	DIP	RAL	33,49	2.2	0D/38	Site 40/48	
16H6	24	DIP	RAL	33,49	2.2	0D/09	Site 40/48	
16L6	24	DIP	RAL	33,49	2.2	0D/03	Site 40/48	
16P6	24	DIP	RAL	33,49	2.2	0D/39	Site 40/48	
18H4	24	DIP	RAL	33,49	2.2	0D/10	Site 40/48	
18L4	24	DIP	RAL	33,49	2.2	0D/04	Site 40/48	
18P4	24	DIP	RAL	33,49	2.2	0D/40	Site 40/48	
20H2	24	DIP	RAL	33,49	2.2	0D/11	Site 40/48	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>National Semiconductor Corp. 20V8 DIP as: (continued)</b>								
20H8	24	DIP	RAL	33,49	2.2	0D/61	Site 40/48	
20L2	24	DIP	RAL	33,49	2.2	0D/05	Site 40/48	
20L8	24	DIP	RAL	33,49	2.2	0D/26	Site 40/48	
20P2	24	DIP	RAL	33,49	2.2	0D/41	Site 40/48	
20P8	24	DIP	RAL	33,49	2.2	0D/62	Site 40/48	
20R4	24	DIP	RAL	33,49	2.2	0D/65	Site 40/48	
20R6	24	DIP	RAL	33,49	2.2	0D/66	Site 40/48	
20R8	24	DIP	RAL	33,49	2.2	0D/27	Site 40/48	
20RP4	24	DIP	RAL	33,49	2.2	0D/46	Site 40/48	
20RP6	24	DIP	RAL	33,49	2.2	0D/64	Site 40/48	
20RP8	24	DIP	RAL	33,49	2.2	0D/63	Site 40/48	
<b>National Semiconductor Corp. 20V8 PLCC as:</b>								
14H8	28	PLCC	RAL	33,49	2.2	00D/708	ChipSite	
14H8	28	PLCC	RAL	33,49	3.0	00D/708	PinSite	28 PIN PLCC MB
14L8	28	PLCC	RAL	33,49	2.2	00D/702	ChipSite	
14L8	28	PLCC	RAL	33,49	3.0	00D/702	PinSite	28 PIN PLCC MB
14P8	28	PLCC	RAL	33,49	2.2	00D/738	ChipSite	
14P8	28	PLCC	RAL	33,49	3.0	00D/738	PinSite	28 PIN PLCC MB
16H6	28	PLCC	RAL	33,49	2.2	00D/709	ChipSite	
16H6	28	PLCC	RAL	33,49	3.0	00D/709	PinSite	28 PIN PLCC MB
16L6	28	PLCC	RAL	33,49	2.2	00D/703	ChipSite	
16L6	28	PLCC	RAL	33,49	3.0	00D/703	PinSite	28 PIN PLCC MB
16P6	28	PLCC	RAL	33,49	2.2	00D/739	ChipSite	
16P6	28	PLCC	RAL	33,49	3.0	00D/739	PinSite	28 PIN PLCC MB
18H4	28	PLCC	RAL	33,49	2.2	00D/710	ChipSite	
18H4	28	PLCC	RAL	33,49	3.0	00D/710	PinSite	28 PIN PLCC MB
18L4	28	PLCC	RAL	33,49	2.2	00D/704	ChipSite	
18L4	28	PLCC	RAL	33,49	3.0	00D/704	PinSite	28 PIN PLCC MB
18P4	28	PLCC	RAL	33,49	2.2	00D/740	ChipSite	
18P4	28	PLCC	RAL	33,49	3.0	00D/740	PinSite	28 PIN PLCC MB
20H2	28	PLCC	RAL	33,49	2.2	00D/711	ChipSite	
20H2	28	PLCC	RAL	33,49	3.0	00D/711	PinSite	28 PIN PLCC MB
20H8	28	PLCC	RAL	33,49	2.2	00D/761	ChipSite	
20H8	28	PLCC	RAL	33,49	3.0	00D/761	PinSite	28 PIN PLCC MB
20L2	28	PLCC	RAL	33,49	2.2	00D/705	ChipSite	
20L2	28	PLCC	RAL	33,49	3.0	00D/705	PinSite	28 PIN PLCC MB
20L8	28	PLCC	RAL	33,49	2.2	00D/726	ChipSite	
20L8	28	PLCC	RAL	33,49	3.0	00D/726	PinSite	28 PIN PLCC MB
20P2	28	PLCC	RAL	33,49	2.2	00D/741	ChipSite	
20P2	28	PLCC	RAL	33,49	3.0	00D/741	PinSite	28 PIN PLCC MB
20P8	28	PLCC	RAL	33,49	2.2	00D/762	ChipSite	
20P8	28	PLCC	RAL	33,49	3.0	00D/762	PinSite	28 PIN PLCC MB
20R4	28	PLCC	RAL	33,49	2.2	00D/765	ChipSite	
20R4	28	PLCC	RAL	33,49	3.0	00D/765	PinSite	28 PIN PLCC MB
20R6	28	PLCC	RAL	33,49	2.2	00D/766	ChipSite	
20R6	28	PLCC	RAL	33,49	3.0	00D/766	PinSite	28 PIN PLCC MB
20R8	28	PLCC	RAL	33,49	2.2	00D/727	ChipSite	
20R8	28	PLCC	RAL	33,49	3.0	00D/727	PinSite	28 PIN PLCC MB
20RP4	28	PLCC	RAL	33,49	2.2	00D/746	ChipSite	
20RP4	28	PLCC	RAL	33,49	3.0	00D/746	PinSite	28 PIN PLCC MB
20RP6	28	PLCC	RAL	33,49	2.2	00D/764	ChipSite	
20RP6	28	PLCC	RAL	33,49	3.0	00D/764	PinSite	28 PIN PLCC MB

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
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**National Semiconductor Corp. 20V8 PLCC as: (continued)**

20RP8	28	PLCC	RAL	33,49	2.2	00D/763	ChipSite	28 PIN PLCC MB
20RP8	28	PLCC	RAL	33,49	3.0	00D/763	PinSite	

**National Semiconductor Corp. 20V8/A/QS DIP as:**

14H8A	24	DIP	RAL	33,49	2.5	0D/08	Site 40/48	
14L8A	24	DIP	RAL	33,49	2.5	0D/02	Site 40/48	
14P8A	24	DIP	RAL	33,49	2.5	0D/38	Site 40/48	
16H6A	24	DIP	RAL	33,49	2.5	0D/09	Site 40/48	
16L6A	24	DIP	RAL	33,49	2.5	0D/03	Site 40/48	
16P6A	24	DIP	RAL	33,49	2.5	0D/39	Site 40/48	
18H4A	24	DIP	RAL	33,49	2.5	0D/10	Site 40/48	
18L4A	24	DIP	RAL	33,49	2.5	0D/04	Site 40/48	
18P4A	24	DIP	RAL	33,49	2.5	0D/40	Site 40/48	
20H2A	24	DIP	RAL	33,49	2.5	0D/11	Site 40/48	
20H8A	24	DIP	RAL	33,49	2.5	0D/61	Site 40/48	
20L2A	24	DIP	RAL	33,49	2.5	0D/05	Site 40/48	
20L8A	24	DIP	RAL	33,49	2.5	0D/26	Site 40/48	
20P2A	24	DIP	RAL	33,49	2.5	0D/41	Site 40/48	
20P8A	24	DIP	RAL	33,49	2.5	0D/62	Site 40/48	
20R4A	24	DIP	RAL	33,49	2.5	0D/65	Site 40/48	
20R6A	24	DIP	RAL	33,49	2.5	0D/66	Site 40/48	
20R8A	24	DIP	RAL	33,49	2.5	0D/27	Site 40/48	
20RP4A	24	DIP	RAL	33,49	2.5	0D/46	Site 40/48	
20RP6A	24	DIP	RAL	33,49	2.5	0D/64	Site 40/48	
20RP8A	24	DIP	RAL	33,49	2.5	0D/63	Site 40/48	

**SGS-Thomson Microelectronics 16V8/AS DIP as:**

10H8	20	DIP	RAL	33,49	2.8	14/18	Site 40/48	
10H8A	20	DIP	RAL	33,49	2.8	14/18	Site 40/48	
10L8	20	DIP	RAL	33,49	2.8	14/13	Site 40/48	
10L8A	20	DIP	RAL	33,49	2.8	14/13	Site 40/48	
10P8	20	DIP	RAL	33,49	2.8	14/32	Site 40/48	
10P8A	20	DIP	RAL	33,49	2.8	14/32	Site 40/48	
12H6	20	DIP	RAL	33,49	2.8	14/19	Site 40/48	
12H6A	20	DIP	RAL	33,49	2.8	14/19	Site 40/48	
12L6	20	DIP	RAL	33,49	2.8	14/14	Site 40/48	
12L6A	20	DIP	RAL	33,49	2.8	14/14	Site 40/48	
12P6	20	DIP	RAL	33,49	2.8	14/33	Site 40/48	
12P6A	20	DIP	RAL	33,49	2.8	14/33	Site 40/48	
14H4	20	DIP	RAL	33,49	2.8	14/20	Site 40/48	
14H4A	20	DIP	RAL	33,49	2.8	14/20	Site 40/48	
14L4	20	DIP	RAL	33,49	2.8	14/15	Site 40/48	
14L4A	20	DIP	RAL	33,49	2.8	14/15	Site 40/48	
14P4	20	DIP	RAL	33,49	2.8	14/34	Site 40/48	
14P4A	20	DIP	RAL	33,49	2.8	14/34	Site 40/48	
16H2	20	DIP	RAL	33,49	2.8	14/22	Site 40/48	
16H2A	20	DIP	RAL	33,49	2.8	14/22	Site 40/48	
16H8	20	DIP	RAL	33,49	2.8	14/25	Site 40/48	
16H8A	20	DIP	RAL	33,49	2.8	14/25	Site 40/48	
16L2	20	DIP	RAL	33,49	2.8	14/16	Site 40/48	
16L2A	20	DIP	RAL	33,49	2.8	14/16	Site 40/48	
16L8	20	DIP	RAL	33,49	2.8	14/17	Site 40/48	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics 16V8/AS DIP as: (continued)</b>								
16L8A	20	DIP	RAL	33,49	2.8	14/17	Site 40/48	
16P2	20	DIP	RAL	33,49	2.8	14/35	Site 40/48	
16P2A	20	DIP	RAL	33,49	2.8	14/35	Site 40/48	
16P8	20	DIP	RAL	33,49	2.8	14/30	Site 40/48	
16P8A	20	DIP	RAL	33,49	2.8	14/30	Site 40/48	
16R4	20	DIP	RAL	33,49	2.8	14/81	Site 40/48	
16R4A	20	DIP	RAL	33,49	2.8	14/81	Site 40/48	
16R6	20	DIP	RAL	33,49	2.8	14/80	Site 40/48	
16R6A	20	DIP	RAL	33,49	2.8	14/80	Site 40/48	
16R8	20	DIP	RAL	33,49	2.8	14/82	Site 40/48	
16R8A	20	DIP	RAL	33,49	2.8	14/82	Site 40/48	
16RP4	20	DIP	RAL	33,49	2.8	14/85	Site 40/48	
16RP4A	20	DIP	RAL	33,49	2.8	14/85	Site 40/48	
16RP6	20	DIP	RAL	33,49	2.8	14/86	Site 40/48	
16RP6A	20	DIP	RAL	33,49	2.8	14/86	Site 40/48	
16RP8	20	DIP	RAL	33,49	2.8	14/87	Site 40/48	
16RP8A	20	DIP	RAL	33,49	2.8	14/87	Site 40/48	
<b>SGS-Thomson Microelectronics 16V8/AS PLCC as:</b>								
10H8	20	PLCC	RAL	33,49	2.8	014/718	ChipSite	
10H8	20	PLCC	RAL	33,49	3.0	014/718	PinSite	20 PIN PLCC MB
10H8A	20	PLCC	RAL	33,49	2.8	014/718	ChipSite	
10H8A	20	PLCC	RAL	33,49	3.0	014/718	PinSite	20 PIN PLCC MB
10L8	20	PLCC	RAL	33,49	2.8	014/713	ChipSite	
10L8	20	PLCC	RAL	33,49	3.0	014/713	PinSite	20 PIN PLCC MB
10L8A	20	PLCC	RAL	33,49	2.8	014/713	ChipSite	
10L8A	20	PLCC	RAL	33,49	3.0	014/713	PinSite	20 PIN PLCC MB
10P8	20	PLCC	RAL	33,49	2.8	014/732	ChipSite	
10P8	20	PLCC	RAL	33,49	3.0	014/732	PinSite	20 PIN PLCC MB
10P8A	20	PLCC	RAL	33,49	2.8	014/732	ChipSite	
10P8A	20	PLCC	RAL	33,49	3.0	014/732	PinSite	20 PIN PLCC MB
12H6	20	PLCC	RAL	33,49	2.8	014/719	ChipSite	
12H6	20	PLCC	RAL	33,49	3.0	014/719	PinSite	20 PIN PLCC MB
12H6A	20	PLCC	RAL	33,49	2.8	014/719	ChipSite	
12H6A	20	PLCC	RAL	33,49	3.0	014/719	PinSite	20 PIN PLCC MB
12L6	20	PLCC	RAL	33,49	2.8	014/714	ChipSite	
12L6	20	PLCC	RAL	33,49	3.0	014/714	PinSite	20 PIN PLCC MB
12L6A	20	PLCC	RAL	33,49	2.8	014/714	ChipSite	
12L6A	20	PLCC	RAL	33,49	3.0	014/714	PinSite	20 PIN PLCC MB
12P6	20	PLCC	RAL	33,49	2.8	014/733	ChipSite	
12P6	20	PLCC	RAL	33,49	3.0	014/733	PinSite	20 PIN PLCC MB
12P6A	20	PLCC	RAL	33,49	2.8	014/733	ChipSite	
12P6A	20	PLCC	RAL	33,49	3.0	014/733	PinSite	20 PIN PLCC MB
14H4	20	PLCC	RAL	33,49	2.8	014/720	ChipSite	
14H4	20	PLCC	RAL	33,49	3.0	014/720	PinSite	20 PIN PLCC MB
14H4A	20	PLCC	RAL	33,49	2.8	014/720	ChipSite	
14H4A	20	PLCC	RAL	33,49	3.0	014/720	PinSite	20 PIN PLCC MB
14L4	20	PLCC	RAL	33,49	2.8	014/715	ChipSite	
14L4	20	PLCC	RAL	33,49	3.0	014/715	PinSite	20 PIN PLCC MB
14L4A	20	PLCC	RAL	33,49	2.8	014/715	ChipSite	
14L4A	20	PLCC	RAL	33,49	3.0	014/715	PinSite	20 PIN PLCC MB
14P4	20	PLCC	RAL	33,49	2.8	014/734	ChipSite	
14P4	20	PLCC	RAL	33,49	3.0	014/734	PinSite	20 PIN PLCC MB
14P4A	20	PLCC	RAL	33,49	2.8	014/734	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics 16V8/AS PLCC as: (continued)</b>								
14P4A	20	PLCC	RAL	33,49	3.0	014/734	PinSite	20 PIN PLCC MB
16H2	20	PLCC	RAL	33,49	2.8	014/722	ChipSite	20 PIN PLCC MB
16H2	20	PLCC	RAL	33,49	3.0	014/722	PinSite	
16H2A	20	PLCC	RAL	33,49	2.8	014/722	ChipSite	20 PIN PLCC MB
16H2A	20	PLCC	RAL	33,49	3.0	014/722	PinSite	
16H8	20	PLCC	RAL	33,49	2.8	014/725	ChipSite	20 PIN PLCC MB
16H8	20	PLCC	RAL	33,49	3.0	014/725	PinSite	
16H8A	20	PLCC	RAL	33,49	2.8	014/725	ChipSite	20 PIN PLCC MB
16H8A	20	PLCC	RAL	33,49	3.0	014/725	PinSite	
16L2	20	PLCC	RAL	33,49	2.8	014/716	ChipSite	20 PIN PLCC MB
16L2	20	PLCC	RAL	33,49	3.0	014/716	PinSite	
16L2A	20	PLCC	RAL	33,49	2.8	014/716	ChipSite	20 PIN PLCC MB
16L2A	20	PLCC	RAL	33,49	3.0	014/716	PinSite	
16L8	20	PLCC	RAL	33,49	2.8	014/717	ChipSite	20 PIN PLCC MB
16L8	20	PLCC	RAL	33,49	3.0	014/717	PinSite	
16L8A	20	PLCC	RAL	33,49	2.8	014/717	ChipSite	20 PIN PLCC MB
16L8A	20	PLCC	RAL	33,49	3.0	014/717	PinSite	
16P2	20	PLCC	RAL	33,49	2.8	014/735	ChipSite	20 PIN PLCC MB
16P2	20	PLCC	RAL	33,49	3.0	014/735	PinSite	
16P2A	20	PLCC	RAL	33,49	2.8	014/735	ChipSite	20 PIN PLCC MB
16P2A	20	PLCC	RAL	33,49	3.0	014/735	PinSite	
16P8	20	PLCC	RAL	33,49	2.8	014/730	ChipSite	20 PIN PLCC MB
16P8	20	PLCC	RAL	33,49	3.0	014/730	PinSite	
16P8A	20	PLCC	RAL	33,49	2.8	014/730	ChipSite	20 PIN PLCC MB
16P8A	20	PLCC	RAL	33,49	3.0	014/730	PinSite	
16R4	20	PLCC	RAL	33,49	2.8	014/781	ChipSite	20 PIN PLCC MB
16R4	20	PLCC	RAL	33,49	3.0	014/781	PinSite	
16R4A	20	PLCC	RAL	33,49	2.8	014/781	ChipSite	20 PIN PLCC MB
16R4A	20	PLCC	RAL	33,49	3.0	014/781	PinSite	
16R6	20	PLCC	RAL	33,49	2.8	014/780	ChipSite	20 PIN PLCC MB
16R6	20	PLCC	RAL	33,49	3.0	014/780	PinSite	
16R6A	20	PLCC	RAL	33,49	2.8	014/780	ChipSite	20 PIN PLCC MB
16R6A	20	PLCC	RAL	33,49	3.0	014/780	PinSite	
16R8	20	PLCC	RAL	33,49	2.8	014/782	ChipSite	20 PIN PLCC MB
16R8	20	PLCC	RAL	33,49	3.0	014/782	PinSite	
16R8A	20	PLCC	RAL	33,49	2.8	014/782	ChipSite	20 PIN PLCC MB
16R8A	20	PLCC	RAL	33,49	3.0	014/782	PinSite	
16RP4	20	PLCC	RAL	33,49	2.8	014/785	ChipSite	20 PIN PLCC MB
16RP4	20	PLCC	RAL	33,49	3.0	014/785	PinSite	
16RP4A	20	PLCC	RAL	33,49	2.8	014/785	ChipSite	20 PIN PLCC MB
16RP4A	20	PLCC	RAL	33,49	3.0	014/785	PinSite	
16RP6	20	PLCC	RAL	33,49	2.8	014/786	ChipSite	20 PIN PLCC MB
16RP6	20	PLCC	RAL	33,49	3.0	014/786	PinSite	
16RP6A	20	PLCC	RAL	33,49	2.8	014/786	ChipSite	20 PIN PLCC MB
16RP6A	20	PLCC	RAL	33,49	3.0	014/786	PinSite	
16RP8	20	PLCC	RAL	33,49	2.8	014/787	ChipSite	20 PIN PLCC MB
16RP8	20	PLCC	RAL	33,49	3.0	014/787	PinSite	
16RP8A	20	PLCC	RAL	33,49	2.8	014/787	ChipSite	20 PIN PLCC MB
16RP8A	20	PLCC	RAL	33,49	3.0	014/787	PinSite	

**SGS-Thomson Microelectronics 20V8/AS DIP as:**

14H8	24	DIP	RAL	33,49	2.8	14/08	Site 40/48
14H8A	24	DIP	RAL	33,49	2.8	14/08	Site 40/48
14L8	24	DIP	RAL	33,49	2.8	14/02	Site 40/48
14L8A	24	DIP	RAL	33,49	2.8	14/02	Site 40/48
14P8	24	DIP	RAL	33,49	2.8	14/38	Site 40/48

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics 20V8/AS DIP as: (continued)</b>								
14P8A	24	DIP	RAL	33,49	2.8	14/38	Site 40/48	
16H6	24	DIP	RAL	33,49	2.8	14/09	Site 40/48	
16H6A	24	DIP	RAL	33,49	2.8	14/09	Site 40/48	
16L6	24	DIP	RAL	33,49	2.8	14/03	Site 40/48	
16L6A	24	DIP	RAL	33,49	2.8	14/03	Site 40/48	
16P6	24	DIP	RAL	33,49	2.8	14/39	Site 40/48	
16P6A	24	DIP	RAL	33,49	2.8	14/39	Site 40/48	
18H4	24	DIP	RAL	33,49	2.8	14/10	Site 40/48	
18H4A	24	DIP	RAL	33,49	2.8	14/10	Site 40/48	
18L4	24	DIP	RAL	33,49	2.8	14/04	Site 40/48	
18L4A	24	DIP	RAL	33,49	2.8	14/04	Site 40/48	
18P4	24	DIP	RAL	33,49	2.8	14/40	Site 40/48	
18P4A	24	DIP	RAL	33,49	2.8	14/40	Site 40/48	
20H2	24	DIP	RAL	33,49	2.8	14/11	Site 40/48	
20H2A	24	DIP	RAL	33,49	2.8	14/11	Site 40/48	
20H8	24	DIP	RAL	33,49	2.8	14/61	Site 40/48	
20H8A	24	DIP	RAL	33,49	2.8	14/61	Site 40/48	
20L2	24	DIP	RAL	33,49	2.8	14/05	Site 40/48	
20L2A	24	DIP	RAL	33,49	2.8	14/05	Site 40/48	
20L8	24	DIP	RAL	33,49	2.8	14/26	Site 40/48	
20L8A	24	DIP	RAL	33,49	2.8	14/26	Site 40/48	
20P2	24	DIP	RAL	33,49	2.8	14/41	Site 40/48	
20P2A	24	DIP	RAL	33,49	2.8	14/41	Site 40/48	
20P8	24	DIP	RAL	33,49	2.8	14/62	Site 40/48	
20P8A	24	DIP	RAL	33,49	2.8	14/62	Site 40/48	
20R4	24	DIP	RAL	33,49	2.8	14/65	Site 40/48	
20R4A	24	DIP	RAL	33,49	2.8	14/65	Site 40/48	
20R6	24	DIP	RAL	33,49	2.8	14/66	Site 40/48	
20R6A	24	DIP	RAL	33,49	2.8	14/66	Site 40/48	
20R8	24	DIP	RAL	33,49	2.8	14/27	Site 40/48	
20R8A	24	DIP	RAL	33,49	2.8	14/27	Site 40/48	
20RP4	24	DIP	RAL	33,49	2.8	14/46	Site 40/48	
20RP4A	24	DIP	RAL	33,49	2.8	14/46	Site 40/48	
20RP6	24	DIP	RAL	33,49	2.8	14/64	Site 40/48	
20RP6A	24	DIP	RAL	33,49	2.8	14/64	Site 40/48	
20RP8	24	DIP	RAL	33,49	2.8	14/63	Site 40/48	
20RP8A	24	DIP	RAL	33,49	2.8	14/63	Site 40/48	
<b>SGS-Thomson Microelectronics 20V8/AS PLCC as:</b>								
14H8	28	PLCC	RAL	33,49	2.8	014/708	ChipSite	
14H8	28	PLCC	RAL	33,49	3.0	014/708	PinSite	28 PIN PLCC MB
14H8A	28	PLCC	RAL	33,49	2.8	014/708	ChipSite	
14H8A	28	PLCC	RAL	33,49	3.0	014/708	PinSite	28 PIN PLCC MB
14L8	28	PLCC	RAL	33,49	2.8	014/702	ChipSite	
14L8	28	PLCC	RAL	33,49	3.0	014/702	PinSite	28 PIN PLCC MB
14L8A	28	PLCC	RAL	33,49	2.8	014/702	ChipSite	
14L8A	28	PLCC	RAL	33,49	3.0	014/702	PinSite	28 PIN PLCC MB
14P8	28	PLCC	RAL	33,49	2.8	014/738	ChipSite	
14P8	28	PLCC	RAL	33,49	3.0	014/738	PinSite	28 PIN PLCC MB
14P8A	28	PLCC	RAL	33,49	2.8	014/738	ChipSite	
14P8A	28	PLCC	RAL	33,49	3.0	014/738	PinSite	28 PIN PLCC MB
16H6	28	PLCC	RAL	33,49	2.8	014/709	ChipSite	
16H6	28	PLCC	RAL	33,49	3.0	014/709	PinSite	28 PIN PLCC MB
16H6A	28	PLCC	RAL	33,49	2.8	014/709	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics 20V8/AS PLCC as: (continued)</b>								
16H6A	28	PLCC	RAL	33,49	3.0	014/709	PinSite	28 PIN PLCC MB
16L6	28	PLCC	RAL	33,49	2.8	014/703	ChipSite	
16L6	28	PLCC	RAL	33,49	3.0	014/703	PinSite	28 PIN PLCC MB
16L6A	28	PLCC	RAL	33,49	2.8	014/703	ChipSite	
16L6A	28	PLCC	RAL	33,49	3.0	014/703	PinSite	28 PIN PLCC MB
16P6	28	PLCC	RAL	33,49	2.8	014/739	ChipSite	
16P6	28	PLCC	RAL	33,49	3.0	014/739	PinSite	28 PIN PLCC MB
16P6A	28	PLCC	RAL	33,49	2.8	014/739	ChipSite	
16P6A	28	PLCC	RAL	33,49	3.0	014/739	PinSite	28 PIN PLCC MB
18H4	28	PLCC	RAL	33,49	2.8	014/710	ChipSite	
18H4	28	PLCC	RAL	33,49	3.0	014/710	PinSite	28 PIN PLCC MB
18H4A	28	PLCC	RAL	33,49	2.8	014/710	ChipSite	
18H4A	28	PLCC	RAL	33,49	3.0	014/710	PinSite	28 PIN PLCC MB
18L4	28	PLCC	RAL	33,49	2.8	014/704	ChipSite	
18L4	28	PLCC	RAL	33,49	3.0	014/704	PinSite	28 PIN PLCC MB
18L4A	28	PLCC	RAL	33,49	2.8	014/704	ChipSite	
18L4A	28	PLCC	RAL	33,49	3.0	014/704	PinSite	28 PIN PLCC MB
18P4	28	PLCC	RAL	33,49	2.8	014/740	ChipSite	
18P4	28	PLCC	RAL	33,49	3.0	014/740	PinSite	28 PIN PLCC MB
18P4A	28	PLCC	RAL	33,49	2.8	014/740	ChipSite	
18P4A	28	PLCC	RAL	33,49	3.0	014/740	PinSite	28 PIN PLCC MB
20H2	28	PLCC	RAL	33,49	2.8	014/711	ChipSite	
20H2	28	PLCC	RAL	33,49	3.0	014/711	PinSite	28 PIN PLCC MB
20H2A	28	PLCC	RAL	33,49	2.8	014/711	ChipSite	
20H2A	28	PLCC	RAL	33,49	3.0	014/711	PinSite	28 PIN PLCC MB
20H8	28	PLCC	RAL	33,49	2.8	014/761	ChipSite	
20H8	28	PLCC	RAL	33,49	3.0	014/761	PinSite	28 PIN PLCC MB
20H8A	28	PLCC	RAL	33,49	2.8	014/761	ChipSite	
20H8A	28	PLCC	RAL	33,49	3.0	014/761	PinSite	28 PIN PLCC MB
20L2	28	PLCC	RAL	33,49	2.8	014/705	ChipSite	
20L2	28	PLCC	RAL	33,49	3.0	014/705	PinSite	28 PIN PLCC MB
20L2A	28	PLCC	RAL	33,49	2.8	014/705	ChipSite	
20L2A	28	PLCC	RAL	33,49	3.0	014/705	PinSite	28 PIN PLCC MB
20L8	28	PLCC	RAL	33,49	2.8	014/726	ChipSite	
20L8	28	PLCC	RAL	33,49	3.0	014/726	PinSite	28 PIN PLCC MB
20L8A	28	PLCC	RAL	33,49	2.8	014/726	ChipSite	
20L8A	28	PLCC	RAL	33,49	3.0	014/726	PinSite	28 PIN PLCC MB
20P2	28	PLCC	RAL	33,49	2.8	014/741	ChipSite	
20P2	28	PLCC	RAL	33,49	3.0	014/741	PinSite	28 PIN PLCC MB
20P2A	28	PLCC	RAL	33,49	2.8	014/741	ChipSite	
20P2A	28	PLCC	RAL	33,49	3.0	014/741	PinSite	28 PIN PLCC MB
20P8	28	PLCC	RAL	33,49	2.8	014/762	ChipSite	
20P8	28	PLCC	RAL	33,49	3.0	014/762	PinSite	28 PIN PLCC MB
20P8A	28	PLCC	RAL	33,49	2.8	014/762	ChipSite	
20P8A	28	PLCC	RAL	33,49	3.0	014/762	PinSite	28 PIN PLCC MB
20R4	28	PLCC	RAL	33,49	2.8	014/765	ChipSite	
20R4	28	PLCC	RAL	33,49	3.0	014/765	PinSite	28 PIN PLCC MB
20R4A	28	PLCC	RAL	33,49	2.8	014/765	ChipSite	
20R4A	28	PLCC	RAL	33,49	3.0	014/765	PinSite	28 PIN PLCC MB
20R6	28	PLCC	RAL	33,49	2.8	014/766	ChipSite	
20R6	28	PLCC	RAL	33,49	3.0	014/766	PinSite	28 PIN PLCC MB
20R6A	28	PLCC	RAL	33,49	2.8	014/766	ChipSite	
20R6A	28	PLCC	RAL	33,49	3.0	014/766	PinSite	28 PIN PLCC MB
20R8	28	PLCC	RAL	33,49	2.8	014/727	ChipSite	
20R8	28	PLCC	RAL	33,49	3.0	014/727	PinSite	28 PIN PLCC MB
20R8A	28	PLCC	RAL	33,49	2.8	014/727	ChipSite	

Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>SGS-Thomson Microelectronics 20V8/AS PLCC as: (continued)</b>								
20R8A	28	PLCC	RAL	33,49	3.0	014/727	PinSite	28 PIN PLCC MB
20RP4	28	PLCC	RAL	33,49	2.8	014/746	ChipSite	
20RP4	28	PLCC	RAL	33,49	3.0	014/746	PinSite	28 PIN PLCC MB
20RP4A	28	PLCC	RAL	33,49	2.8	014/746	ChipSite	
20RP4A	28	PLCC	RAL	33,49	3.0	014/746	PinSite	28 PIN PLCC MB
20RP6	28	PLCC	RAL	33,49	2.8	014/764	ChipSite	
20RP6	28	PLCC	RAL	33,49	3.0	014/764	PinSite	28 PIN PLCC MB
20RP6A	28	PLCC	RAL	33,49	2.8	014/764	ChipSite	
20RP6A	28	PLCC	RAL	33,49	3.0	014/764	PinSite	28 PIN PLCC MB
20RP8	28	PLCC	RAL	33,49	2.8	014/763	ChipSite	
20RP8	28	PLCC	RAL	33,49	3.0	014/763	PinSite	28 PIN PLCC MB
20RP8A	28	PLCC	RAL	33,49	2.8	014/763	ChipSite	
20RP8A	28	PLCC	RAL	33,49	3.0	014/763	PinSite	28 PIN PLCC MB
<b>VLSI Technology, Inc. 16V8 DIP as:</b>								
10H8	20	DIP	RAL	33,49	2.2	2F/18	Site 40/48	
10L8	20	DIP	RAL	33,49	2.2	2F/13	Site 40/48	
10P8	20	DIP	RAL	33,49	2.2	2F/32	Site 40/48	
12H6	20	DIP	RAL	33,49	2.2	2F/19	Site 40/48	
12L6	20	DIP	RAL	33,49	2.2	2F/14	Site 40/48	
12P6	20	DIP	RAL	33,49	2.2	2F/33	Site 40/48	
14H4	20	DIP	RAL	33,49	2.2	2F/20	Site 40/48	
14L4	20	DIP	RAL	33,49	2.2	2F/15	Site 40/48	
14P4	20	DIP	RAL	33,49	2.2	2F/34	Site 40/48	
16H2	20	DIP	RAL	33,49	2.2	2F/22	Site 40/48	
16H8	20	DIP	RAL	33,49	2.2	2F/25	Site 40/48	
16L2	20	DIP	RAL	33,49	2.2	2F/16	Site 40/48	
16L8	20	DIP	RAL	33,49	2.2	2F/17	Site 40/48	
16P2	20	DIP	RAL	33,49	2.2	2F/35	Site 40/48	
16P8	20	DIP	RAL	33,49	2.2	2F/30	Site 40/48	
16R4	20	DIP	RAL	33,49	2.2	2F/81	Site 40/48	
16R6	20	DIP	RAL	33,49	2.2	2F/80	Site 40/48	
16R8	20	DIP	RAL	33,49	2.2	2F/82	Site 40/48	
16RP4	20	DIP	RAL	33,49	2.2	2F/85	Site 40/48	
16RP6	20	DIP	RAL	33,49	2.2	2F/86	Site 40/48	
16RP8	20	DIP	RAL	33,49	2.2	2F/87	Site 40/48	
<b>VLSI Technology, Inc. 16V8 PLCC as:</b>								
10H8	20	PLCC	RAL	33,49	2.2	02F/718	ChipSite	
10H8	20	PLCC	RAL	33,49	3.0	02F/718	PinSite	20 PIN PLCC MB
10L8	20	PLCC	RAL	33,49	2.2	02F/713	ChipSite	
10L8	20	PLCC	RAL	33,49	3.0	02F/713	PinSite	20 PIN PLCC MB
10P8	20	PLCC	RAL	33,49	2.2	02F/732	ChipSite	
10P8	20	PLCC	RAL	33,49	3.0	02F/732	PinSite	20 PIN PLCC MB
12H6	20	PLCC	RAL	33,49	2.2	02F/719	ChipSite	
12H6	20	PLCC	RAL	33,49	3.0	02F/719	PinSite	20 PIN PLCC MB
12L6	20	PLCC	RAL	33,49	2.2	02F/714	ChipSite	
12L6	20	PLCC	RAL	33,49	3.0	02F/714	PinSite	20 PIN PLCC MB
12P6	20	PLCC	RAL	33,49	2.2	02F/733	ChipSite	
12P6	20	PLCC	RAL	33,49	3.0	02F/733	PinSite	20 PIN PLCC MB
14H4	20	PLCC	RAL	33,49	2.2	02F/720	ChipSite	
14H4	20	PLCC	RAL	33,49	3.0	02F/720	PinSite	20 PIN PLCC MB
14L4	20	PLCC	RAL	33,49	2.2	02F/715	ChipSite	



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>VLSI Technology, Inc. 16V8 PLCC as: (continued)</b>								
14L4	20	PLCC	RAL	33,49	3.0	02F/715	PinSite	20 PIN PLCC MB
14P4	20	PLCC	RAL	33,49	2.2	02F/734	ChipSite	20 PIN PLCC MB
14P4	20	PLCC	RAL	33,49	3.0	02F/734	PinSite	
16H2	20	PLCC	RAL	33,49	2.2	02F/722	ChipSite	20 PIN PLCC MB
16H2	20	PLCC	RAL	33,49	3.0	02F/722	PinSite	
16H8	20	PLCC	RAL	33,49	2.2	02F/725	ChipSite	20 PIN PLCC MB
16H8	20	PLCC	RAL	33,49	3.0	02F/725	PinSite	
16L2	20	PLCC	RAL	33,49	2.2	02F/716	ChipSite	20 PIN PLCC MB
16L2	20	PLCC	RAL	33,49	3.0	02F/716	PinSite	
16L8	20	PLCC	RAL	33,49	2.2	02F/717	ChipSite	20 PIN PLCC MB
16L8	20	PLCC	RAL	33,49	3.0	02F/717	PinSite	
16P2	20	PLCC	RAL	33,49	2.2	02F/735	ChipSite	20 PIN PLCC MB
16P2	20	PLCC	RAL	33,49	3.0	02F/735	PinSite	
16P8	20	PLCC	RAL	33,49	2.2	02F/730	ChipSite	20 PIN PLCC MB
16P8	20	PLCC	RAL	33,49	3.0	02F/730	PinSite	
16R4	20	PLCC	RAL	33,49	2.2	02F/781	ChipSite	20 PIN PLCC MB
16R4	20	PLCC	RAL	33,49	3.0	02F/781	PinSite	
16R6	20	PLCC	RAL	33,49	2.2	02F/780	ChipSite	20 PIN PLCC MB
16R6	20	PLCC	RAL	33,49	3.0	02F/780	PinSite	
16R8	20	PLCC	RAL	33,49	2.2	02F/782	ChipSite	20 PIN PLCC MB
16R8	20	PLCC	RAL	33,49	3.0	02F/782	PinSite	
16RP4	20	PLCC	RAL	33,49	2.2	02F/785	ChipSite	20 PIN PLCC MB
16RP4	20	PLCC	RAL	33,49	3.0	02F/785	PinSite	
16RP6	20	PLCC	RAL	33,49	2.2	02F/786	ChipSite	20 PIN PLCC MB
16RP6	20	PLCC	RAL	33,49	3.0	02F/786	PinSite	
16RP8	20	PLCC	RAL	33,49	2.2	02F/787	ChipSite	20 PIN PLCC MB
16RP8	20	PLCC	RAL	33,49	3.0	02F/787	PinSite	

**VLSI Technology, Inc. 20V8 DIP as:**

14H8	24	DIP	RAL	33,49	2.2	2F/08	Site 40/48
14L8	24	DIP	RAL	33,49	2.2	2F/02	Site 40/48
14P8	24	DIP	RAL	33,49	2.2	2F/38	Site 40/48
16H6	24	DIP	RAL	33,49	2.2	2F/09	Site 40/48
16L6	24	DIP	RAL	33,49	2.2	2F/03	Site 40/48
16P6	24	DIP	RAL	33,49	2.2	2F/39	Site 40/48
18H4	24	DIP	RAL	33,49	2.2	2F/10	Site 40/48
18L4	24	DIP	RAL	33,49	2.2	2F/04	Site 40/48
18P4	24	DIP	RAL	33,49	2.2	2F/40	Site 40/48
20H2	24	DIP	RAL	33,49	2.2	2F/11	Site 40/48
20H8	24	DIP	RAL	33,49	2.2	2F/61	Site 40/48
20L2	24	DIP	RAL	33,49	2.2	2F/05	Site 40/48
20L8	24	DIP	RAL	33,49	2.2	2F/26	Site 40/48
20P2	24	DIP	RAL	33,49	2.2	2F/41	Site 40/48
20P8	24	DIP	RAL	33,49	2.2	2F/62	Site 40/48
20R4	24	DIP	RAL	33,49	2.2	2F/65	Site 40/48
20R6	24	DIP	RAL	33,49	2.2	2F/66	Site 40/48
20R8	24	DIP	RAL	33,49	2.2	2F/27	Site 40/48
20RP4	24	DIP	RAL	33,49	2.2	2F/46	Site 40/48
20RP6	24	DIP	RAL	33,49	2.2	2F/64	Site 40/48
20RP8	24	DIP	RAL	33,49	2.2	2F/63	Site 40/48



Device Part Number	Pins	Package Type	Device Type	Footnote	Product Version	Family/Pinout Code	Module	MatchBook/ Adapter
<b>VLSI Technology, Inc. 20V8 PLCC as:</b>								
14H8	28	PLCC	RAL	33,49	2.2	02F/708	ChipSite	
14H8	28	PLCC	RAL	33,49	3.0	02F/708	PinSite	28 PIN PLCC MB
14L8	28	PLCC	RAL	33,49	2.2	02F/702	ChipSite	
14L8	28	PLCC	RAL	33,49	3.0	02F/702	PinSite	28 PIN PLCC MB
14P8	28	PLCC	RAL	33,49	2.2	02F/738	ChipSite	
14P8	28	PLCC	RAL	33,49	3.0	02F/738	PinSite	28 PIN PLCC MB
16H6	28	PLCC	RAL	33,49	2.2	02F/709	ChipSite	
16H6	28	PLCC	RAL	33,49	3.0	02F/709	PinSite	28 PIN PLCC MB
16L6	28	PLCC	RAL	33,49	2.2	02F/703	ChipSite	
16L6	28	PLCC	RAL	33,49	3.0	02F/703	PinSite	28 PIN PLCC MB
16P6	28	PLCC	RAL	33,49	2.2	02F/739	ChipSite	
16P6	28	PLCC	RAL	33,49	3.0	02F/739	PinSite	28 PIN PLCC MB
18H4	28	PLCC	RAL	33,49	2.2	02F/710	ChipSite	
18H4	28	PLCC	RAL	33,49	3.0	02F/710	PinSite	28 PIN PLCC MB
18L4	28	PLCC	RAL	33,49	2.2	02F/704	ChipSite	
18L4	28	PLCC	RAL	33,49	3.0	02F/704	PinSite	28 PIN PLCC MB
18P4	28	PLCC	RAL	33,49	2.2	02F/740	ChipSite	
18P4	28	PLCC	RAL	33,49	3.0	02F/740	PinSite	28 PIN PLCC MB
20H2	28	PLCC	RAL	33,49	2.2	02F/711	ChipSite	
20H2	28	PLCC	RAL	33,49	3.0	02F/711	PinSite	28 PIN PLCC MB
20H8	28	PLCC	RAL	33,49	2.2	02F/761	ChipSite	
20H8	28	PLCC	RAL	33,49	3.0	02F/761	PinSite	28 PIN PLCC MB
20L2	28	PLCC	RAL	33,49	2.2	02F/705	ChipSite	
20L2	28	PLCC	RAL	33,49	3.0	02F/705	PinSite	28 PIN PLCC MB
20L8	28	PLCC	RAL	33,49	2.2	02F/726	ChipSite	
20L8	28	PLCC	RAL	33,49	3.0	02F/726	PinSite	28 PIN PLCC MB
20P2	28	PLCC	RAL	33,49	2.2	02F/741	ChipSite	
20P2	28	PLCC	RAL	33,49	3.0	02F/741	PinSite	28 PIN PLCC MB
20P8	28	PLCC	RAL	33,49	2.2	02F/762	ChipSite	
20P8	28	PLCC	RAL	33,49	3.0	02F/762	PinSite	28 PIN PLCC MB
20R4	28	PLCC	RAL	33,49	2.2	02F/765	ChipSite	
20R4	28	PLCC	RAL	33,49	3.0	02F/765	PinSite	28 PIN PLCC MB
20R6	28	PLCC	RAL	33,49	2.2	02F/766	ChipSite	
20R6	28	PLCC	RAL	33,49	3.0	02F/766	PinSite	28 PIN PLCC MB
20R8	28	PLCC	RAL	33,49	2.2	02F/727	ChipSite	
20R8	28	PLCC	RAL	33,49	3.0	02F/727	PinSite	28 PIN PLCC MB
20RP4	28	PLCC	RAL	33,49	2.2	02F/746	ChipSite	
20RP4	28	PLCC	RAL	33,49	3.0	02F/746	PinSite	28 PIN PLCC MB
20RP6	28	PLCC	RAL	33,49	2.2	02F/764	ChipSite	
20RP6	28	PLCC	RAL	33,49	3.0	02F/764	PinSite	28 PIN PLCC MB
20RP8	28	PLCC	RAL	33,49	2.2	02F/763	ChipSite	
20RP8	28	PLCC	RAL	33,49	3.0	02F/763	PinSite	28 PIN PLCC MB

## Footnotes

1. This device has initialization data which follows the Main Array data in User Memory.
2. This device is a microcontroller with security bit programming capability. Security bit programming may be enabled in the Program Memory Device Options screen.
3. This device has initialization data which follows the Main Array data in User Memory. It also has an asynchronous/synchronous output enable bit which follows the initialize word data in User Memory. If the output enable bit is programmed to 1, the outputs are enabled synchronously.
4. This device has initialization data at device address 2000 hex, following the Main Array. It also has an architecture byte at device address 2001 hex. The following table shows the architecture data for the three modes of operation.  
  
Asynchronous operation, address 2001, value 00 hex  
Synchronous operation, address 2001, value 01 hex  
Initialize word operation, address 2001, value 02 hex
5. This device requires socket adapter PA78P322KD. It is available from the device manufacturer. Set device block size to 4000 hex.
6. This device is a microcontroller with security bit programming capability. Security bit programming may be enabled in the Program Memory Device Options screen; this overrides the Mask Option Register (MOR) security bit value in User Memory. Note that there are two menu selections for the 68705S3: mask set 1TJ6 identifies parts produced before 1987, and mask set 0A20T identifies parts produced since January 1987.
7. This device's memory map is offset to start at User Memory address 0000 hex. The EPROM memory block starts at User Memory 0000 and is translated to device address F000 hex during a program operation. A load operation will read device address F000 hex and translate address 0000 to User Memory.
8. This device's memory array begins at address 80 hex. The programmer will automatically transfer data from User Memory to the device by the required offset. If the data block begins at User Memory 0 hex, it will be translated to device address 80 hex during a program operation. Conversely a load operation will transfer the data block from device address 80 hex to User Memory address 0.
9. This device requires socket adapter PA78P322KC. It is available from the device manufacturer. Set device block size to 4000 hex.
10. The address block for this device is defined with the configuration byte at location 103F hex (low nibble only). The EEPROM is located at address B600 to B7FF hex. The two ROM blocks are at addresses BF40 to BFFF and E000 to FFFF hex.

11. This device does not support block limits; the block size is 64K. Memory locations not defined as EPROM or EEPROM are set to zero. The configuration byte, located at address 103F, specifies the starting address of the EEPROM memory and enables/disables the COP system watch dog timer.  
  
The upper nibble of the configuration byte defines the most significant bit of the starting address of the EEPROM memory. If the configuration byte is set to 3F hex, then the EEPROM starting address is 3800 hex (3000 hex + 800 hex). Note that the upper nibble of the configuration byte cannot be set to B hex.  
  
The lower nibble of the configuration byte defines the enable/disable state of the COP system watch dog timer. This nibble can only be set to F hex (disable) or B hex (enable).
12. This device requires socket adapter H31VSA01A. It is available from the device manufacturer.
13. This device requires socket adapter H67PWA01A. It is available from the device manufacturer.
14. This device requires socket adapter H31YSA01A. It is available from the device manufacturer.
15. This device requires socket adapter H35VSA01A. It is available from the device manufacturer.
16. This device requires socket adapter HS35ZESF01H. It is available from the device manufacturer.
17. This device requires socket adapter 87C452P. It is available from the device manufacturer.
18. This device is a microcontroller with Security Data and User Data features. Enable the security bit in the Program Device Options screen by using the security bit option or by programming a 1 at address 800 hex. The User Data Bytes are at address 801 and 802 hex. The Security Bit and User Data features must be enabled in the Program Device Options screen.
19. To use this device, early versions of UniSite must be modified to ensure that UniSite complies with programming specifications. Data I/O will modify UniSite model numbers 901-0058-001 through 901-0058-006 free of charge. Contact Data I/O Customer Support for further information.
20. This device uses the fuse map of the National 16P8 which contains 2055 fuses. The additional fuse locations are initially set to all zeros and will not affect the device checksum. JEDEC files that set the phantom locations in the fuse map will be calculated in the checksum but will not affect program or verify operations. A Load operation will reset the phantom locations to zero. The Main Array for the 16P4 are fuses 512 through 1535, the polarity fuses are 2053 and 2054. All other fuse locations are phantom fuses.
21. The window on these devices should be covered with an opaque label during programming.

22. Cross Programming support for GAL devices are listed in the Cross Programming section of the Device List.

23. This device contains two separate EPROM areas, one for Instruction information and the other for Data. The Instruction memory space is address 0 to 7FF hex; the instruction data consists of four bytes, three information bytes followed by a null byte.

The Data memory space is address 800 to BFF hex; data is oriented in reverse order with address BFF hex as the first byte and address 800 hex as the last address. This format is compatible with the NEC 77P20 assembler. See NEC's 77P20 databook for more information.

24. This device is a microcontroller with security bit programming capability. Security bit programming may be enabled in the Program Memory Device Options screen. This device also has address locations in the programmable array area that are reserved for special functions and are not programmable. These locations are 9-B hex, D-F hex, 18-3F hex, and the most significant byte of C hex. These locations will always load as FFFF hex or FF hex for location 00C. If data is entered at these locations, a verify error occurs, but data will not be programmed into the device.

The least significant byte of location C hex is the Chip Configuration byte, which is programmable. The two most significant bits of this location are the lock bits which can only be programmed if the Security Bit programming is enabled from the Program Device Options screen. Consult the Manufacturer's specifications for further information. This device does not need to have the Byte Swap Option enabled (in UniSite version 2.5 or later).

25. This device is a microcontroller with two security options. Currently, only one of the two security options may be implemented per device.

The first security option protects against in-circuit reads. This option is selected from the program screen. The second security option is activated by programming device addresses 782 hex and 783 hex with data 20 hex and FE hex respectively. This prevents the part from entering program mode.

Addresses 782 hex and 783 hex may also be used for normal data, however, once data is programmed at these addresses, you must erase the device before attempting another program operation.

26. This device has special programmable registers that can be programmed by entering data at locations following the Main Array. The CLR register is located at device address 8000 hex. The SFR register is located at device address 8001 hex. The SFRLR register is located at device address 8002 hex. Refer to the manufacturer's spec sheet for the correct data pattern (leave all undefined bits as 1s).

If the EPROM array and the SFR registers are programmed to overlap, the programmer will fill the overlapped section in RAM with zeros.

27. This device has a data format very similar to that described in footnote 23. The major difference is in the partitioning of the EPROM space. Instruction data memory space is at 0 to 1FFF hex. Data memory space is at 2000 to 27FF hex with the first data word at address 2000 hex.
28. This programmer does not fully support all structured test cases for this device.

Refer to the sections in your manual which describe the "High Speed Logic Drivers" and the "Compensated Vector Test" options. These options can be used to help identify the cause and possibly eliminate a vector from failing.

29. Any of the three security options can be implemented for this device (Encryption Array data, Security Bit 1 or Security Bit 2). You can select the security options from the Program Device Options screen, or from the Main Array. Once any of the security options have been programmed into the device, no further programming is allowed.

Illegal operations will generate one of these error messages:

- A. Encryption Array Already Programmed - A programming operation has been attempted after the Encryption Array has been programmed.
- B. Security Fuse Programmed or Bad Device - A programming operation has been attempted after security bit 1 has been programmed.
- C. Security Fuse Violation - A programming operation has been attempted after security bit 2 has been programmed. This error will also be generated for a load or verify operation.
- D. Test Fuse Programming Error - This error will be displayed if there is a programming error in the Encryption Array.

Data in the programmer's User Memory is partitioned as follows:

Main Array Data, 0 through 7FF hex  
Encryption Array Data, 800 through 80F hex  
Security Bit1 Data, 810 hex (bit D7)  
Security Bit2 Data, 810 hex (bit D6)

Enter Encryption Array data by editing the appropriate address in User Memory. Enter Security Bit data via the edit screen or the PROGRAM DEVICE Options screen.

After the Encryption Array is programmed, device data will no longer match data in User RAM. Encryption Array and Security Bit data cannot be read from the device.

30. This device is a microcontroller with security bit programming capability. Security bit programming may be enabled in the Program Memory Device Options screen.

The device's memory map starting at address 2000 hex is offset by 2000 hex bytes to start at the User Memory address 0000 hex. Because of differences in assemblers, fill first 10000 hex bytes in User Ram with FF hex before file downloading. Partial device operation is not allowed.

This device also has address locations in the programmable array area that are reserved for special functions and are not programmable. These addresses are B, D-F, 20-3F hex, and the most significant bytes of A and C hex. These addresses will always load as FFFF hex (FF hex for addresses 00A and 00C). If data is entered at these addresses, a verify error occurs, but the data will not be programmed into the device.

The least significant byte of address A hex is the PPW byte, which is programmable. The least significant byte of address C hex is the Chip Configuration byte, which is programmable. The two most significant bits of this location are the lock bits which can only be programmed if the Security Bit programming is enabled from the Options screen. Consult the manufacturer's specifications for further information.

Starting with Unisite software version 3.7, 2900 version 1.8, and 3900 version 1.2 it is recommended to fill the most significant byte of address 000C with 20 hex.

The User Ram is showed in words as default. It may be more convenient to select Data Word Width = 8 and then follow memory map in Intel's User's Guide.

31. This device does not support Illegal Bit Test or Blank Check. However, the programmer will not indicate that the tests are not supported.
32. This device contains a User Electronic Signature (UES) array. Programming this array is optional. Two devices are available; one with the UES suffix and one without.
- The device without the UES suffix programs the device but does not program the UES array. The device with the UES suffix programs all the arrays.
- When you download a JEDEC file, you will select the device compatible with the JEDEC file. If the device is not compatible, one of the following errors will be displayed: File not initialized or Incompatible User Data.
33. This device contains extra fuses which are automatically configured by the programmer. If these extra fuses fail to program, an error occurs. However, since these fuses are not part of the fuse map, an underblow/overblow operation will not indicate their presence.

34. This device requires socket adapter PA78P322L. It is available from the device manufacturer. Set device block size to 4000 hex.
35. The memory map of this device is offset to start at User Memory address 0000 hex bytes. The location of the EPROM memory block starts at User Memory 0000 hex, and will be translated to device address 20 hex during a program operation. A load operation will read device address 20 hex and translate address 0000 to User Memory.
36. This Device has a Software Data Protection option that can be enabled or disabled on the Program Device Options screen.  
  
(UniSite only) This feature is only presented on the Program Device screen for single device operations. When the Data Protection option is selected in the single device screen, it also applies to the SetSite module operation for Gang programming.
37. If you attempt to re-program this device after programming the security fuse, a Device Over-Current Fault error may be generated and there is a potential that the device may be damaged.
38. This device has initialization data that follows the Main Array located at device address 800 hex. The device also has an architecture byte located at 801 hex. The following table shows the architecture data for the four modes of operation.  
  

Asynchronous Enable, Asynchronous Initialize	801 hex = FF hex
Synchronous Enable, Asynchronous Initialize	801 hex = FE hex
Asynchronous Enable, Synchronous Initialize	801 hex = FD hex
Synchronous Enable, Synchronous Initialize	801 hex = FC hex
39. Actel's family of FPGAs are treated as memory devices for programming operations. The fuse data is represented in a binary format commonly used for memory devices. This requires a data translation program that runs on the Action Logic development system. This program will translate fuse information on the Actel programming operations and file transfers. Block limits are not supported for the Actel FPGA's. Do not change the user data size after downloading data. Contact Data I/O Customer Support and request the Actel Programming Application Note.
40. This device does not support Preload vectors.
41. This device requires socket adapter AS-68-40-01P-6. It is available from Emulation Technology Inc. (408-982-0660).
42. This device requires socket adapter AS-68-40-04P-6. It is available from Emulation Technology Inc. (408-982-0660).



43. Data for this device is organized into the User RAM as follows: Main Array data, four words of User I.D. (identification), information, and a configuration word.

This device has a 12 bit data word which is represented as 16 bit data for the programmer. Data Bits 12-15 throughout the Main Array are not used. Bits 4-15 in the User I.D. and configuration words are not used. All unused bits will be loaded from the device to User RAM as zeros and are ignored during the verify operation. During programming, bits 4-11 of the User I.D. and configuration word are automatically be programmed to zeros. The Security Bit can be programmed only by setting the data to a one and enabling the one on the Programming Options screen. Oscillator selection bits cannot be reprogrammed if they were configured by the factory (OTP devices only).

When assembling your source file, use the output option that produces the merged 8 bit Intellec Hex object file (INHX8M). The object file that was created can then be downloaded to the programmer by selecting the Intel Intellec 8/MDS translator (code 83).

44. This device is thinner than most JEDEC type PLCC devices, therefore an LCC Spacer may be required to make proper contact. A device insertion error occurs when the device makes poor contact. A spacer is not necessary when using a PinSite, 2900, or 3900 MatchBook for LCC devices. Contact Data I/O Customer Support for information regarding the LCC Spacer Kit.
45. This device has a differential cell array utilizing floating gate technology. Any unprogrammed location is in an undetermined state. Loading an unprogrammed device will produce inconsistent checksums. Verify operations are valid only after the device has been programmed. Some differential cell devices support a special blank check routine. If blank check is supported, attempts to reprogram a non-blank device will generate an illegal bit error. Although setting block limits is allowed, it is recommended that the entire device be programmed to avoid ambiguous states.
46. Partial device operations are not allowed on this device. If your data file is smaller than the device size, make sure that the extra locations in User RAM are filled with the blank state (FF hex).
47. The data file used to program this device contains the security option data. The Security option will not be programmed into the device unless it is enabled from the Programming Options screen.
48. This device has an asynchronous/synchronous output enable bit that follows the Main Array data in User Memory. The outputs are enabled synchronously when programmed to 1.
49. This device contains an Electronic ID. If an ID error occurs, the wrong device is selected or the version of this device is not supported. A software update may be required. Contact Data I/O Customer Support for more information.
50. This device does not support the test code/checksum and test signature features.



51. Any of the four security options can be implemented for this device (Encryption Array data, Security Bits 1, 2 or 3). The security options can be selected from the Program Device Options screen, or from the Main Array. Once any of the security options have been programmed into the device, no further programming is allowed.

Data in the Programmer's User Memory is partitioned as follows:

Main Array Data, 0 through 7FFF hex

Encryption Array Data, 8000 through 803F hex

Security Bit1 Data, 8040 hex (bit D7)

Security Bit2 Data, 8040 hex (bit D6)

Security Bit3 Data, 8040 hex (bit D5)

Enter Encryption Array data by editing the appropriate address in User Memory. Enter Security Bit data via the edit screen or the Program Device Options screen.

After the Encryption Array is programmed, device data will no longer match data in User RAM. Encryption Array and Security Bit data cannot be read from the device.

52. This device is a microcontroller with Security Bit programming capability. Security Bit programming may be enabled in the Program Memory Device Options screen. (No Uprom bit programming in UniSite 3.0 or 2900 1.2.)

The device's memory map starting at address 2000 hex is offset by 2000 hex bytes to start at the User Memory address 0000 hex. Because of differences in assemblers, fill first 10000 hex bytes in User Ram with FF hex before file downloading. Partial device operation is not allowed.

This device also has address locations in the programmable array area that are reserved for special functions and are not programmable. These addresses are B, D-F and 2F-3F hex. These locations will always load as FFFF hex. If data is entered in User RAM at these locations, a verify error occurs, but no data will be programmed at those locations.

Address C hex is also reserved. The most significant byte of C hex is always programmed to 20 hex. If data other than 20 hex is entered in User RAM at this location, a verify error occurs, but data 20 hex will be programmed.

The least significant byte of address C hex is the Chip Configuration byte, which is programmable. The two most significant bits of this location are the lock bits, which can be programmed only by selecting the Security Bit programming option in the PROGRAM Options screen. Consult the Manufacturer's specifications for further information.

The User Ram is showed in words as default. It may be more convenient to select Data Word Width = 8 and then follow memory map in Intel's User's Guide.

53. This device contains a security fuse, however, the option is currently not supported. If you attempt to program the security fuse manually, the part will secure. However, reprogramming will no longer be possible.

54. This device does not support upload, output to disk, fill RAM, Edit data or Blank check. Disable the "Blank Check" option, located on the Programming Options screen, to avoid invalid non-blank and illegal-bit errors.

If you attempt to reprogram, load, or verify this device after you program the security fuse, a Device Over-Current Fault error may be generated and may potentially damage the device.

55. This device does not support output to disk, Fill RAM, Edit data or Blank check. Disable the "Blank Check" option, located on the Programming Options screen, to avoid invalid non-blank and illegal-bit errors.

This programmer supports POF files generated by the MAXPLUS (TM Altera) development system software version 2.5 or later.

Some POF files contain "don't care" data that is calculated into the data checksum. If you perform a Load operation after programming a downloaded file, the checksum may be slightly different.

56. This device has an architecture byte at address 8000 hex. Set the appropriate bits to 1 to program the desired features into the device. Set all unused bits in the architecture byte to 0.

Address	Bit	Function	Device(s) Supporting Feature
8000 (hex)	2	ALE polarity	Cypress 7C277 and 7C279
8000	1	ALE enable	Cypress 7C277 and 7C279
8000	0	SYNC enable	Cypress 7C277

57. The WSI-PSD301/302/303 Maple compiled data file may contain data at locations that are not programmable. These locations will be filled with zeros during any device related operation (program, load, verify). This may result in an incorrect checksum if you program a device immediately after downloading the PSD301/302/303 data file to the programmer.

To get the correct checksum, perform a load operation after programming the device. Any devices programmed after the first device will display the correct checksum.

The PSD301/302/303 contains a Security Bit (SECA) which can be enabled in the Program Memory Device Options screen.

58. This device requires one of the following socket adapters: ✕

Adapter	Manufacturer
AS-44-28-02P-6YAM	Emulation Technology (408-982-0660)
44PL/28D6-ZL-L1016	EDI Corporation (209-892-3270)
44PL/28D6-ZAL-L1016	EDI Corporation (209-892-3270)

59. This device requires socket adapter HS538ESH01H. It is available from the device manufacturer.
60. This device requires socket adapter HS538ESG01H. It is available from the device manufacturer.
61. This device requires socket adapter HS338ESH01H. It is available from the device manufacturer. Set device block size to 4000 hex.
62. This device requires socket adapter HS18XESF01H. It is available from the device manufacturer. Set device block size to 4000 hex.
63. This device requires socket adapter HS460ESF01H. It is available from the device manufacturer. Set device block size to 4000 hex. Data bits 5-7 should be set to ones at all address locations. Refer to the manufacturer's spec sheet for the correct data pattern.
64. This device requires socket adapter HS470ESS11H. It is available from the device manufacturer. Data bits 5-7 should be set to ones at all address locations. Refer to the manufacturer's spec sheet for the correct data pattern.
65. This device requires socket adapter PCA4708. It is available from the device manufacturer. Set device begin address and device block size to 4000 hex.
66. This device requires socket adapter PCA4708. It is available from the device manufacturer.
67. This device requires socket adapter PCA4700G02. It is available from the device manufacturer. Place jumper JP1 on adapter to 64. Set device begin address to 800 hex and device block size to 1800 hex.
68. This device requires socket adapter PCA4701G02. It is available from the device manufacturer. Place jumper JP1 on adapter to 64. Set device begin address to 800 hex and device block size to 1800 hex.
69. This device requires socket adapter PCA4700G02. It is available from the device manufacturer. Place jumper JP1 on adapter to 64. Set device block size to 4000 hex.
70. This device requires socket adapter PCA4701G02. It is available from the device manufacturer. Place jumper JP1 on adapter to 64. Set device block size to 4000 hex.

71. This device requires socket adapter PCA4705. It is available from the device manufacturer. Set device begin address to 1000 hex and device block size 3000 hex.
72. This device requires socket adapter PCA4730. It is available from the device manufacturer. Set device begin address and device block size to 4000 hex.
73. This device requires socket adapter PCA4731. It is available from the device manufacturer. Set device begin address and device block size to 4000 hex.
74. This device requires socket adapter PCA4719. It is available from the device manufacturer. Set device begin address and device block size to 4000 hex.
75. This device requires socket adapter PCA4710. It is available from the device manufacturer. Set device begin address and device block size to 4000 hex.
76. This device requires socket adapter PCA4791. It is available from the device manufacturer.
77. This device requires socket adapter PCA4740. It is available from the device manufacturer. Set device block size to 1000 hex.
78. This device requires socket adapter PCA4741. It is available from the device manufacturer.
79. This device requires socket adapter HS338ESG01H. It is available from the device manufacturer. Set device block size to 4000 hex.
80. This device requires socket adapter HS328ESS01H. It is available from the device manufacturer.
81. This device requires socket adapter HS81XESG01H. It is available from the device manufacturer. Set device block size to 4000 hex.
82. This device requires socket adapter HS528ESS01H. It is available from the device manufacturer. Set device block size to 4000 hex.
83. This device requires socket adapter HS409ESS11H. It is available from the device manufacturer. Data bits 5-7 should be set to ones at all address locations. Refer to the manufacturer's spec sheet for the correct data pattern.
84. This device requires socket adapter PA-78CP14CW. It is available from the device manufacturer. Set device block size to 4000 hex.
85. This device requires socket adapter PA-78P214CW. It is available from the device manufacturer. Set device block size to 4000 hex.
86. This device has phantom fuses in the JEDEC fuse map which are ignored during program and verify operations. These fuses will load as ones. This device must be erased before re-programming. An error will occur if the device is not erased before re-programming.

87. This device requires socket adapter AD-3. It is available from the device manufacturer.
88. This device requires socket adapter AD-4. It is available from the device manufacturer.
89. This device requires socket adapter AD-10. It is available from the device manufacturer.
90. This device requires socket adapter AD-12. It is available from the device manufacturer.
91. This device requires socket adapter 98A-EAC-68. It is available from the device manufacturer.
92. This device requires socket adapter MFT2A02-001. It is available from the device manufacturer.
93. This device requires socket adapter MFT2A02-002. It is available from the device manufacturer.
94. This device does not support Illegal Bit Test. However, the programmer will not indicate that the test is not supported.
95. This device has one or more architecture bits contained in one byte at address 10000 hex. Set the appropriate bits to 1 to program the desired features into the device:

Address	Bit	Function	Device Supporting Feature
8000 (hex)	7 msb	CS2 polarity	Cypress 7C289
8000	6	CS1 polarity	Cypress 7C289
8000	5	WAIT polarity	Cypress 7C289
8000	4	WAIT timing	Cypress 7C289
8000	3	ALE polarity	Cypress 7C289
8000	2	ALE enable	Cypress 7C289
8000	1	Address setup	Cypress 7C289
8000	0 lsb	SYNC enable	Cypress 7C289

96. This device requires a socket adapter that interchanges pins 1 and 4 between the device and ZIF socket.
97. This device requires one of the following socket adapters:

Adapter	Manufacturer
AS-68-28-03P-6YAM	Emulation Technology (408-982-0660)
68PL/28D6-ZL-L1024	EDI Corporation (209-892-3270)
68PL/28D6-ZAL-L1024	EDI Corporation (209-892-3270)

98. This device requires a socket adapter and additional operating instructions. Please contact Data I/O Customer Support for further information.

99. You must clear addresses 2000-2003 hex to zeros for programming the RST polarity. If you do not program the RST polarity, the locations must be set to FF hex.

100. This device requires socket adapter PA-CP14GF. It is available from the device manufacturer. Set device size to 4000 hex.

101. This device requires one of the following socket adapters:

Adapter	Manufacturer
AS-120-28-01Q-6YAM	Emulation Technology (408-982-0660)
120QF/28D6-ZL-L1048	EDI Corporation (209-892-3270)
120QF/28D6-ZAL-L1048	EDI Corporation (209-892-3270)

102. This device requires socket adapter AD14. It is available from the device manufacturer.

103. This device requires socket adapter HS470ESS11H. It is available from the device manufacturer. Data bits 5-7 should be set to ones at all address locations. Refer to the manufacturer's spec sheet for the correct data pattern.

104. This device requires socket adapter HS460ESH01H. It is available from the device manufacturer. Set device size to 4000 hex. Data bits 5-7 should be set to ones at all address locations. Refer to the manufacturer's spec sheet for the correct data pattern.

105. This device requires socket adapter HS328ESS01H. It is available from the device manufacturer.

106. This device requires socket adapter HS528ESS01H. It is available from the device manufacturer. Set device size to 4000 hex.

107. Any of the four security options can be implemented for this device (Encryption Array data, Security Bits 1, 2 or 3). The security options can be selected from the Program Device Options screen, or from the Main Array. Once any of the security options have been programmed into the device, no further programming is allowed.

Data in the programmer's User Memory is partitioned as follows:

Main Array Data	0 through 1FFF hex
Encryption Array Data	2000 through 203F hex
Security Bit1 Data	2040 hex (bit D7)
Security Bit2 Data	2040 hex (bit D6)
Security Bit3 Data	2040 hex (bit D5)

Enter Encryption Array data by editing the appropriate address in User Memory. Enter Security Bit Data via the Edit Screen or the Program Device Options screen.

After the Encryption Array is programmed, device data will no longer match data in User RAM. Encryption Array and Security Bit data cannot be read from the device.

108. Block limits are not supported for this device. The entire memory array will be programmed or erased automatically.
109. At address locations 0 to FFF hex, data bits 4-7 should be set to ones. At address locations 1000 to 1FFF hex, data bits 5-7 should be set to ones. Refer to the manufacturer's spec sheet for the correct data pattern.
110. This device requires socket adapter PCA4710. It is available from the device manufacturer.
111. This device requires socket adapter PCA4711. It is available from the device manufacturer.
112. This device requires socket adapter PCA4709. It is available from the device manufacturer. Set device begin address and block size to 4000 hex.
113. This device requires socket adapter PCA4709. It is available from the device manufacturer.
114. This device requires socket adapter MFT2A02-001. It is available from the device manufacturer. To program the first 128K, select bank 0. Maximum device size is 20000 hex. To program the last 64K, select bank 1. The maximum device size is 10000 hex.
115. This device requires socket adapter PA-78P214GC. It is available from the device manufacturer. Set device block size to 4000 hex.
116. (2900 only) To insert the socket adapter, push down on the ZIF socket handle.
117. This device requires socket adapter MB98A-0AC-68. It is available from the device manufacturer.
118. This device uses 3.0 volts on VCC for load, program, and verify operations. The VCC voltages applied during a two-pass verify operation are 3.0 volts and 3.5 volts.
119. Structured testing is not supported for this device on the ChipSite module.
120. This device's memory map starting at address 2000 hex is offset by 2000 hex bytes to start at the User Memory address 0000 hex. Because of differences in assemblers, fill first 10000 hex bytes in User Ram with FF hex before file downloading. Partial device operation is not allowed.

The device has address locations in the programmable array area that are reserved for special functions and are not programmable. These addresses are A, B, 2F-3F hex, and the least significant bytes of E-hex and F hex. Fill these locations in User RAM with FF hex.

Fill the most significant bytes of C, D, E and F hex in User RAM with 20 hex.

The least significant byte of C hex (CCB byte) is programmable. The two most significant bits of this location are programmable lock bits, which can be programmed only by selecting the Security Bit programming option in the Program Options screen.



To program the CCB1 and Security Key bytes (the least significant byte of D hex and all bytes of address 10-17 hex) consult the manufacturer's specifications.

The User Ram is showed in words as default. It may be more convenient to select Data Word Width = 8 and then follow memory map in Intel's User's Guide.

121. **Caution: use only for FX-core devices.** FX core devices can be distinguish from older 87C51/87C51FA/87C51FB devices via the topside tracking number (FPO number) marked on the part. The topside tracking number on FX core devices will end with a letter 'A'. For more information call Intel.

Any of the four security options can be implemented for this device (Encryption Array data, Security Bits 1, 2 or 3). The security options can be selected from the Program Device Options screen. Data in the Programmer's User Memory is partitioned as follows:

Device	87C51(FX)	87C51FA(FX)	87C51FB(FX)
Main Array	0 - 0FFFh	0 - 1FFFh	0 - 3FFFh
Encrypt. Array	1000 - 103F	2000 - 203Fh	4000 - 403Fh
Security Bit 1	1040 (bit 7)	2040 (bit 7)	4040 (bit 7)
Security Bit 2	1040 (bit 6)	2040 (bit 6)	4040 (bit 6)
Security Bit 3	1040 (bit 5)	2040 (bit 5)	4040 (bit 5)

Enter Encryption Array data by editing the appropriate address in User Memory. Enter Security Bit data via the edit screen or the Program Device Options screen.

After the Encryption Array is programmed, device data will no longer match data in User RAM. Encryption Array and Security Bit data cannot be read from the device.

122. This device requires an adapter that converts the TSOP pinout to a standard DIP socket, for use with Site40 or Site48. The adapter is available from the following vendors:

- Emulation Technology, (408) 982-0660 or
- California Integration Coordinators, (916) 626-6168

123. This device requires socket adapter PA78P328GF. It is available from the device manufacturer. Set device block size to 4000 hex.

124. This device requires socket adapter PA78P328CW. It is available from the device manufacturer. Set device block size to 4000 hex.

125. This device must have the Device Begin Address set to zero, for partial programming to function properly

126. This device must have the Device Begin Address set to zero, and the Device Block Size is set to an even number, for partial programming to function properly



127. This device requires the Fujitsu MB98A-EAC-68 card adapter. The least significant address line on the card is controlled by a dip switch on the adapter. Please use the following procedure to program adjacent bytes as the least significant and most significant byte of a word:

- 1) Set data word width to 16.
- 2) Set auto increment to Y.
- 3) Program even bytes. When the operation is complete, the next device field in the programming menu will change from 1 to 2.
- 4) Toggle dip switch 1 and program odd bytes.

128. This device requires socket adapter AS-84-40-01P-6YAM. It is available from Emulation Technology Inc. (408-982-0660).

129. Some devices may generate intermittent programming errors (low yields). If this occurs, repeat the program operation. Data I/O is currently working with the semiconductor manufacturer to improve yields.

130. This device has a non-contiguous memory map. To insure the integrity of the programmer's checksum, the unused and/or unprogrammable memory locations in user RAM must be set to zero.

Consult the Manufacturer's specifications for further information.

131. This device has a non-contiguous memory map. To insure the integrity of the programmer's checksum, the unused memory locations in user RAM must be set to zero.

Consult the Manufacturer's specifications for further information.

132. The illegal-bit and blank check operations are only executed on the EPROM array.

133. This device contains two separate EPROM areas, an instruction array address 0-1FFF hex and a data array address 4800-4FFF hex. The instruction array has unused bit locations which must be set to ones (FFC00000 hex). The data array has unused bit locations which must be set to ones (FFF00000 hex). Addresses 2000-47FF hex are unprogrammable fill these locations in User RAM with FFFFFFFF hex.

Refer to device specification sheet for more information.

134. This device contains two separate EPROM areas, an instruction array address 0-3FFF hex and a data array address 4800-4FFF hex. The instruction array has unused bit locations which must be set to ones (FFC00000 hex). The data array has unused bit locations which must be set to ones (FFF00000 hex).

Refer to device specification sheet for more information.

135. This device requires socket adapter HS823ESC01H. It is available from the device manufacturer. Set device block size to 5000 hex.

This device contains two separate EPROM areas, an instruction array address 0-1FFF hex and a data array address 4800-4FFF hex. The instruction array has unused bit locations which must be set to ones (FFC00000 hex, msb-lsb). The data array has unused bit locations which must be set to ones (FFF00000 hex). Addresses 2000-47FF hex are unprogrammable fill these locations in User RAM with FFFFFFFF hex.

Refer to device specification sheet for more information.

136. This device requires one of the following socket adapters:

Adapter	Manufacturer
AS-84-28-02P-6YAM	Emulation Technology (408-982-0660)
84PL/28D6-ZL-L1032	EDI Corporation (209-892-3270)
84PL/28D6-ZAL-L1032	EDI Corporation (209-892-3270)

137. Set device block size to 4000 hex.

138. In-module programming with this device requires the use of an in-module adapter with part number 615-1548-002 or greater.

139. The selected device has 2 algorithms available. The part number WITHOUT the asterisk "\*" should be used for devices with the mask 0D33N or later. The part number WITH the asterisk "\*" should be used on devices with the mask 0D54E.

The devices with mask 0D54E has an error in the bootloader which will not allow the device to perform the following functions properly: load, illegal-bit check and blank check. If the default 2 pass verify is not used as the number of verify passes. Please insure that the number of verify passes is set to a minimum of 1.

140. The programmer's user RAM corresponds directly to the memory map of the device.

141. This device contains an Electronic ID. If an ID error occurs, the wrong device is selected or different version of this device is selected. Two different algorithms are available, 1810T and 1810T-NEW. If both algorithms yield "Device ID error" contact Data I/O Customer Service.

142. This device is a microcontroller with Security Data and User Data features. Enable the security bit in the Program Device Options screen by using the security bit option or by programming a 1 at address 1000 hex. The User Data Bytes are at address 1001 and 1002 hex. The Security Bit and User Data features must be enabled in the Program Device Options screen.

143. If the default 2 pass verify is not used as the number of verify passes. Please insure that the number of verify passes is set to a minimum of 1.

144.Data in the Programmer's User Memory is partitioned as follows:

Main array, 0 - 3FFF hex  
 Unused bytes, 4000h - 400C, 400E hex  
 ECON6, 400D hex, (ROM0, RAM0 bits)  
 ECON7, 400F hex (security bits )

The ECON6 or ECON7 have misverified, if a 'Device verification error' occurs during Verify, Blank check or Illegal bit check. To determine which fuse has failed, load the device and view locations ECON6 and ECON7 User memory locations.

145.Data in the Programmer's User Memory is partitioned as follows:

Main Array, 0 - 0FFF hex  
 ECON, 1000 hex

146.This device requires an adapter that converts the PLCC pinout to a standard DIP socket. The adapter is available from device manufacture.

Structured testing is not supported for this device with the adapter.

147.The programmer does not support the "Software Data Protection" feature during programming if the data word width is set to 16-bit or greater.

To use the "Software Data Protect" feature for word widths greater than or equal to 16-bits, use the following procedure:

- Program the device/s with 16-bit(or larger) data word width and "Software Data Protection" disabled.
- Change data word width back to 8-bit.
- Load the programmed device.
- Re-program the device with "Software Data Protection" enabled.

148.For test vectors to run successfully on this device, the JEDEC pin swap function "P" needs to be used. The JEDEC file should be modified by inserting 4 lines after the last fuse number and before the first vector:

Example:

```
L163073 1*
L163082 1*
L163091 1*          <-- last fuse number in JEDEC file
P 15 5 14 4 13 3 12 2 1 11 10 22 21 26 25 30 29 34
33 38 37 42 41 46 45 49 50 60 51 61 52 62 53 63 54
64 55 65 56 66 57 67 68 58 59 47 48 43 44 39 40 35
36 31 32 27 28 23 24 20 19 9 18 8 17 7 16 6*
V0001 01NHXXHHX0HH0XHNHHXNHH11HH10HH11NX1XNX11XX0XXXXX
XNXXNXXXXXXXXXXXXNX*  <-- first vector in JEDEC file
```

149.This device has an electronically erasable array. When re-programming this device, enable the "Erase EE device" option on the program screen by typing Y or space. Failing to set this option could result in an illegal bit error.

150.Data in the programmer's User Memory is partitioned as follows:

EEPROM Array Data, 0D80 through 0FFF hex

EPROM Array Data, 2000 through 7FFF hex

151.The Intel 85C22V10 algorithm is a 22V10 compatible device with superset features. To determine the correct algorithm to use, view the JEDEC file you wish to program and match the QF field to the following menu entries:

QF=5848 — select the 85C22V10 algorithm under the Intel main menu.

QF=5828 — select the 22V10 or the IPLD22V10 algorithm under the Intel main menu, or

QF=5828 — select the 85C22V10 as a 22V10 algorithm under the Intel XPGM menu.

QF=5838 — select the 85C22V10 as a 22VP10 algorithm under the Intel XPGM menu.

QF=5892 — select the 85C22V10 as a 22V10UES algorithm under the Intel XPGM menu. The 85C22V10 does not support the UES bits, so these bits will be ignored in the jedec.

152.The load operation is not supported on this device.

153.Currently, only EPROM protect option is supported. All bytes on secured device are read as FF hex. Secured device passes blank check, but fails during programming.

154.This device requires socket adapter YANO2020A. It is available from the device manufacturer.

155.This device requires socket adapter YANO2020A. It is available from the device manufacturer. Cut the pin 1,2,31 and 32 of the socket adapter.

156.This device requires socket adapter MFT2A06-005. It is available from the device manufacturer.

157.This device requires socket adapter PA78P324KC. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.

158.This device requires socket adapter PA78P324GJ. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.

159.This device requires socket adapter PA78P324LP. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.

160. This device requires socket adapter PA78P324KD. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.
161. This device requires socket adapter PA78P334KE. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.
162. This device requires socket adapter PA78P334GJ. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.
163. This device requires socket adapter PA78P334LQ. It is available from the device manufacturer. Set device block size to 8000 hex, if not use ECC function. Set device block size to A005 hex, if use ECC function. The ECC area has unused bits and it should be set to ones. Refer to device spec sheet for more information.
164. This device requires socket adapter PA78P312CW. It is available from the device manufacturer. Set device block size to 2000 hex.
165. This device requires socket adapter PA78P312GF. It is available from the device manufacturer. Set device block size to 2000 hex.
166. This device requires socket adapter PA78P312GQ. It is available from the device manufacturer. Set device block size to 2000 hex.
167. This device requires socket adapter PA78P312L. It is available from the device manufacturer. Set device block size to 2000 hex.
168. This device requires socket adapter PA78P322GF. It is available from the device manufacturer. Set device block size to 4000 hex.
169. This device requires socket adapter PA78P322GJ. It is available from the device manufacturer. Set device block size to 4000 hex.
170. Data in the programmer's User Memory is partitioned as follows:
- |                 |                       |
|-----------------|-----------------------|
| Not Implemented | 0 through 07FF hex    |
| Reserved        | 0800 through 087F hex |
| Programmable    | 0880 through 0F9F hex |
| Reserved        | 0FA0 through 0FEF hex |
| Programmable    | 0FF0 through 0FF7 hex |
| Reserved        | 0FF8 through 0FFB hex |
| Programmable    | 0FFC through 0FFF hex |
171. Data in the programmer's User Memory is partitioned as follows:
- |                    |                       |
|--------------------|-----------------------|
| Configuration byte | 003F hex              |
| Unused             | 0000 through 0D7F hex |
| EEPROM array data  | 0D80 through 0FFF hex |

172.Data in User Memory is partitioned as follows:

Configuration byte	103F hex
EEPROM array data	FE00 through FFFF hex

173.This device has an electronically erasable array. When re-programming this device, enable the Erase EE Device option on the Program Device screen.

174.Configuration byte is not loaded during the Load operation, but the value of location 103F hex in User Memory is added to the final checksum.

175.Data in User Memory is partitioned as follows:

Configuration byte	003F hex
EEPROM array data	0D80 through 0FFF hex
EPROM array data	2000 through 7FFF hex

176.Data in User Memory is partitioned as follows:

User EPROM	0F00 through 1F00 hex
User Vectors	1FF0 through 1FFF hex

177.This device has a feature which allow individual sectors to be protected. This device has 8 16Kbyte sectors. To secure the sectors please follow the procedure described below:

1. Set the bytes in user ram at locations 20000-20007 hex with protect or un-protect data values.

---

*Note: Protect data can be 1 or any non-zero value. The protect bytes in user ram 20000-20007 hex are not part of the device array, but are included in the device size to allow the programmer to read and store the sector protection information.*

Sector	User RAM Location	Protect Data	Unprotect Data
1	20000 hex	1	0
2	20001 hex	1	0
3	20002 hex	1	0
4	20003 hex	1	0
5	20004 hex	1	0
6	20005 hex	1	0
7	20006 hex	1	0
8	20007 hex	1	0

2. Enable the Program Security Fuse option and set Security Fuse Data to 1 on the Program Device Options screen to enable the protection programming option.

3. Program the device.
178. Consult the Manufacturer's specifications for further information about values of the Configuration byte.









## Application Note

# Family/Pinout Code Theory and Guidelines for Developing Computer Remote Control Drivers

---

This document describes family/pinout (F/P) code theory and suggests device selection alternatives. It also describes the computer remote control (CRC) commands you should use in a device selection routine of a custom CRC driver for the UniSite™, 2900, 3900, and AutoSite™ programmers, and the commands needed to automatically update the driver's device list when a new version of software is installed in the programmer. It does not teach software engineers how to develop an entire CRC driver.

## Introduction

Data I/O programmers, such as UniSite, 2900, and 3900, now enable you to select devices by manufacturer name and device part number rather than by F/P codes from device lists. Selecting devices by entering the appropriate F/P code for the target device was introduced in 1979. Since then, the expansion of device fabrication technology, architecture, and features has outdated the use of F/P codes as a recommended method of device selection because it no longer identifies the unique features of many new devices and often leads to low yields or other programming errors. To understand why device selection with F/P codes is not recommended, you must understand how a programming algorithm is structured.

## Algorithm Structure and Selection

Here's a brief background on the use of F/P codes with programmers such as UniSite, 3900, 2900, and AutoSite.

Selecting an algorithm consists of three elements: the family structure, pinout structure, and device record. A F/P code maps to a F/P structure that defines the algorithm. The device record connects the device part number to the algorithm (F/P structure) and also defines other attributes, such as device insertion (continuity) test, silicon signature, module support, and footnotes.

A device selected by the manufacturer name and device part number displayed in the programmer menu maps directly to one device record (device specific).

A device selected by F/P code may map to multiple device records. The programmer searches the list of device records (sorted by manufacturer name and device part number) in an attempt to find a F/P code match. When devices share the same algorithm (F/P code) but have different attributes in the device record there are potential problems (such as device insertion errors and outdated algorithms).

A common scenario follows:

1. You select an Intel device using a F/P code. The Intel device shares the same F/P code (algorithm) as an AMD device.
2. The programmer searches the records and finds a F/P code match, which turns out to be an AMD device record.

3. The programmer runs a continuity test on the AMD device record. Because the AMD and Intel devices have different characteristics, a device insertion error occurs when the Intel device is used.

## Device Selection Using Computer Remote Control (CRC) Drivers

Computer remote control (CRC) drivers are used to control the programmer from a remote source such as a PC or workstation. You can use commercially available CRC drivers, such as PROMlink™ or TaskLink™, or construct a custom driver developed for a specific environment.

All CRC drivers use the programmer's CRC commands to perform system- and device-related operations. In addition, we recommend that you follow these guidelines when you develop a custom CRC driver.

### CRC Device Selection Commands

Specification changes sometimes require that an algorithm be changed. If a device is selected using the manufacturer name and device part number, the programmer always uses the correct algorithm. If a device is selected using the F/P code, you must review the F/P codes for all devices after each programmer update to ensure that the F/P codes have not changed.

The preferred method of device selection is to select the device by manufacturer name and part number.

To select a device by manufacturer name and part number, the driver program issues the **xx...xx33]** command to select the manufacturer name and the **xx...xx34]** command to select the device part number. (The **xx...xx** refers to the manufacturer name and device part number respectively.)

These commands are described below.

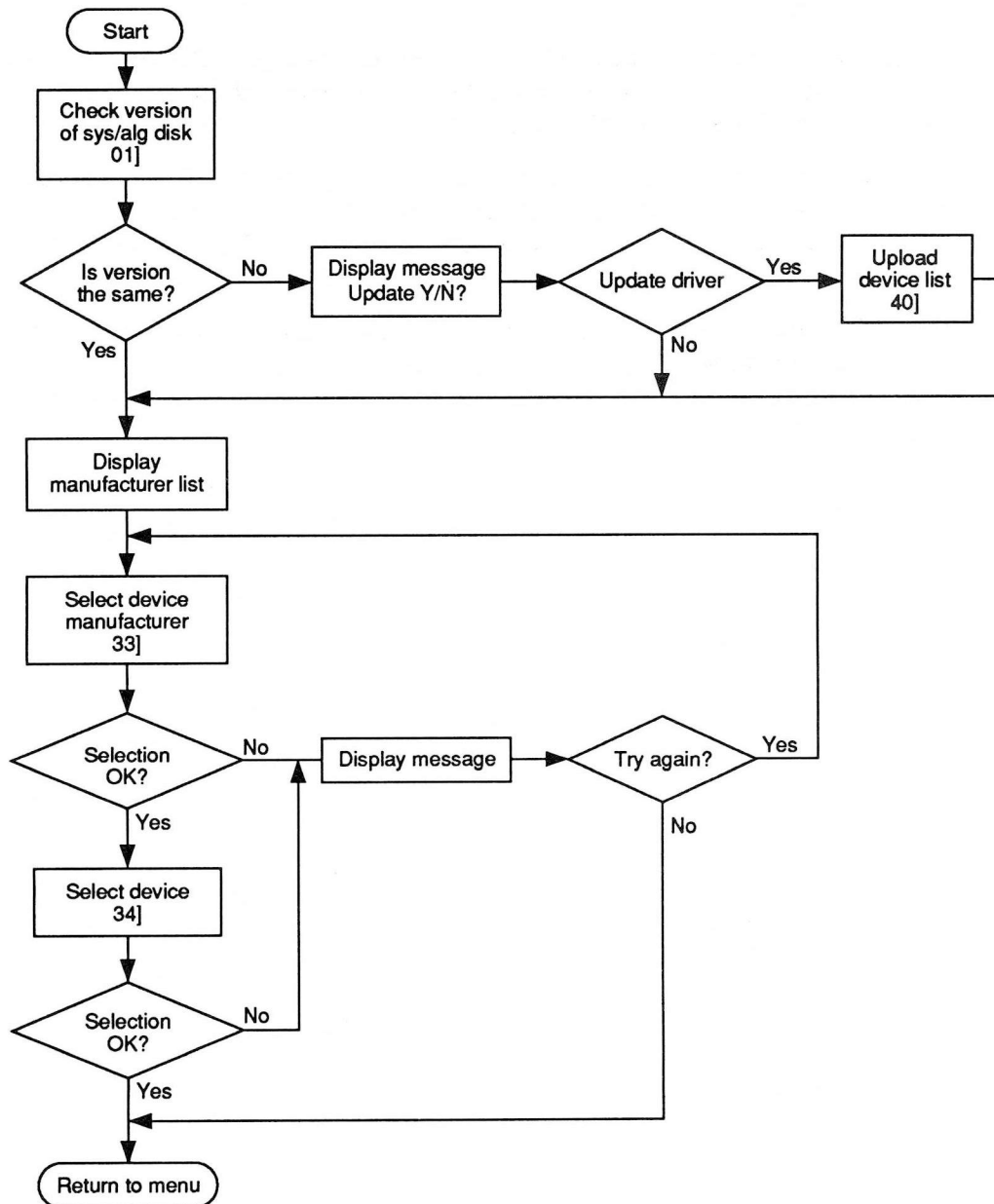
**Select Device Manufacturer: CRC Command 33] Description (xxx...xxx33])** — Selects the device manufacturer for device operations. Valid arguments range from 1 to 13 alphanumeric characters and must match the manufacturer name exactly as it appears on the Manufacturer List screen or as it is uploaded with the **40]** command. The selection does not take effect until the **34]** command is sent.

**Select Device Part Number: CRC Command 34] Description (xxx...xxx34])** — Selects the device part number based on the part number sent in this command and the manufacturer name sent in the **33]** command. Valid arguments range from 1 to 29 alphanumeric characters and must match the part number as it appears on the Part Number screen for the selected manufacturer or as it is uploaded with the **40]** command.

### Updating a CRC Driver Device List

If the manufacturer name or device part number changes during a software update, the driver will not be able to identify that part. Although Data I/O attempts to avoid changes to the manufacturer names or device part numbers, occasionally it does happen. Since the manufacturer name and device part number must match the name and number shown on the programmer display, you may want to add an update feature to your custom driver to facilitate the update of manufacturer names and device part numbers.

To upload all supported device manufacturer names and device part numbers to the host, use the **40]** command. Although this command requires additional code, it eliminates the need for manual updates to the driver's manufacturer name and device part number tables. Figure 1 shows a flow chart of this device list update feature.



095-1490-001

Figure 1. CRC Device List Update Flowchart

## Summary

F/P codes have been used extensively since 1979 to select devices. Due to the increasing number of devices, device architectures, and device-specific features, selecting devices using F/P codes can result in low yields and other programming difficulties. We recommend that you select devices by manufacturer name and part number to increase yields and reduce programming errors.

When constructing a custom CRC driver, use CRC commands **33]** and **34]** to select the manufacturer name and device part number (these commands are used in Data I/O's PROMlink and TaskLink CRC drivers).

We also recommend that the driver include the CRC command **40]** for uploading the current device list to the driver after a programmer update. This command eliminates device-support-related modifications to the driver when software updates are installed in the programmer.

Data I/O is investigating an alternative easy-to-use method of device selection such as a Device Identification Number (DID) that would be unique to each device. Data I/O will notify all customers in advance if changes are planned which affect the programmer's support of existing CRC drivers.

---

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Specifications are subject to change without notice.

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# Keep Current<sup>TM</sup>

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Express Subscription Service

User Manual

February 1992

096-0125-001

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# 1 *Introduction*

---

This chapter describes the two Keep Current™ subscription services: the standard service and the Express service.

---

## Keep Current Subscription Service

This yearly standard service keeps your programmer and documentation up-to-date with the latest features and device support. You receive quarterly update kits that incorporate all changes since the last update.

---

## Keep Current Express Subscription Service

This yearly service adds the Express Option to the standard service described above. This option gives you immediate access to new and improved programming algorithms via the Keep Current Bulletin Board System (BBS). As a Keep Current Express subscriber, you can obtain new and updated device algorithms up to three months before they are incorporated in a quarterly update kit.

Semiconductor companies constantly introduce new devices and issue specification changes to existing devices. Incorporating these changes swiftly in your UniSite assures that you obtain the highest yields and reliability possible.

---

*Note: This service may not be available in all geographic locations. Contact Data I/O Customer Support for more information.*





## **2** *Using the Express Option*

---

---

### **What You Need**

Before you may access the Keep Current algorithms from the BBS, you must take several preparation steps.

**UniSite Requirements** You must be at the latest revision of the UniSite System Software to use the Keep Current algorithms.

**PC Requirements** You must have the following hardware to access the Keep Current BBS:

- An IBM PC or compatible with a 3.5-inch floppy drive
- Installed modem with supporting software
- A double-sided/double-density (DS/DD) 3.5-inch disk formatted on UniSite

**Modem Requirements** To access the Keep Current BBS you need the following:

- Telecommunication software and a modem. The BBS supports 1200/2400/9600/19200 baud with a U.S. Robotics Courier HST Dual Standard V.32bis/V.42bis modem set to 8 data bits, 1 stop bit, and no parity.
- Your telecommunication software must support one of the following binary file transfer protocols:
  - Xmodem
  - Ymodem

- Zmodem
- Kermit
- HS/Link

## BBS Registration

If you owned your UniSite at the time you purchased the Express Service, then you were pre-registered and you can call the Keep Current BBS at any time.

If you ordered the Express Service at the same time you purchased your UniSite, you did not have all the information necessary to pre-register. Before you can access the Keep Current BBS, you must fill out and return the Keep Current Express Registration Card found at the front of your *UniSite User Manual*.

## Logon Information

To log on to the Keep Current BBS, you must know the

- Keep Current BBS phone number, 206 881-3465
- UniSite hardware serial number located on UniSite's back panel

## Logging onto the Keep Current BBS

Before you can log on to the BBS, you must have your telecommunications software and modem installed and operating. Refer to your telecommunications software manual and your modem manual for setup procedures.

1. Dial 206 881-3465 to contact the Keep Current BBS.
2. Wait for the logon screen to appear as shown in Figure 2-1.

Figure 2-1  
Example BBS Logon Screen

```

DDD   A A   TTTT   A A           IIIII / 00
D D   A A   T     A A           I 0 0
D D   AAAAA T     AAAAA         I 0 0
DDD   A A   T     A A           IIIII / 00

=====
"KEEP CURRENT" (tm) Bulletin Board System
=====
      206-881-3465 1200/2400/9600/19200 BAUD
      8 data bits; 1 stop bit; no parity; 24 hours/day
      U.S. Robotics Courier HST Dual Standard/U.32bis/U.42bis modem

Log-on help information:
Valid Product Names: unisite
UniSite Serial Number is located on back panel

dBBS Version Ver 6.0 - NET 11-19-91 - Copr. 1985 - 1991 Daniel B. Doman

Welcome to the Data I/O Keep Current BBS Node ->1

Please Enter Product Name:
Please Enter Serial Number:
    
```

3. Type **unisite** at the following prompt:

Please Enter Product Name: **unisite** .

4. Type the serial number found on the back panel of your UniSite at the following prompt:

Please Enter Serial Number: **0123456789** .

*Note: If you attempt to use a serial number other than the one registered with the BBS Express service, an error message is displayed.*

## Selecting the Keep Current Algorithm

After a few seconds, the second Keep Current BBS screen appears as shown in Figure 2-2.

**Figure 2-2**  
Keep Current Algorithm Select Screen

Your Keep Current Express Subscription Service will expire on mm-dd-yy

The following algorithms may be downloaded for UniSite s/n 0123456789

Update Category: N = New Device, S = Spec change by mfg., I = Improved  
DID: Data I/O Device I.D.

Manufacturer	Part	Pkg	Cat	System/ Alg Rev	DID	Date Added
(0) ABC Company	16L8	PLCC	N	3.6/d	6142	12/13
(1) XYZ Electric	27C1263	SOIC	S	3.6/a	3147	3/5
(2) JKL Semicond	22V10	DIP	I	3.6/f	2246	1/17

Please select an algorithm by number, N to select next page or Q to Logoff

The information displayed at the top of the screen shows the expiration date of your subscription to the Express Service and the UniSite serial number for which this service applies.

The Keep Current algorithms available on the Keep Current BBS are in one of three update categories (Cat):

- N = New Device (a device not previously included on the UniSite Algorithm disk)
- S = Specification Change (a device whose programming specification has been updated by the manufacturer)
- I = Improved (a device algorithm that has been improved)

Keep Current algorithms are listed on this screen and the following information is included:

Item	Description
Manufacturer	Manufacturer of the device
Part	Device number
Pkg	Package type
Cat	One of three update categories, N (New device), S (Specification change by manufacturer), or I (Improved devices)
System/Alg Rev	The required System Software version and corresponding algorithm version letter
DID	Data I/O device identification
Date Added	The date the algorithm was placed on the Keep Current BBS

Once you have chosen the algorithm you want to download from the Keep Current BBS, follow the steps below to download the algorithm to your PC.

1. Identify the algorithm by the number in parentheses to the left of the Manufacturer.
2. Type the number of the algorithm at the following prompt:

Please select an algorithm by number, or Q to Logoff

The screen shown in Figure 2-3 appears, indicating that the BBS software is preparing to download the algorithm to your PC. The screen prompts you to select your download protocol.

**Figure 2-3**  
Select the Download Protocol Screen

```

Please standby while the selected algorithm is prepared for downloading

The file has been prepared and will now be downloaded to your computer

Please select the appropriate download protocol

X      - Xmodem/Checksum
C      - Xmodem/CRC
Y      - Ymodem
Z      - Zmodem
K      - Kermit
H      - HS/Link

```

3. Choose the download protocol that you are using by entering the corresponding letter at the prompt.

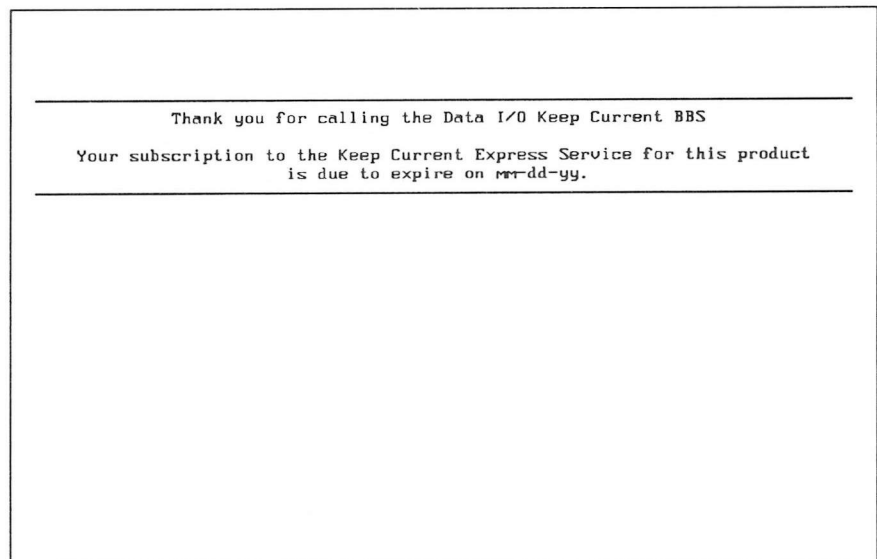
4. Select the same protocol in your telecommunications software and begin the file download process.

The selected algorithm is downloaded to your PC.

When the algorithm has been successfully downloaded, you are returned to the Algorithm Select screen shown in Figure 2-2. You may choose another algorithm to download or press Q to log off the Keep Current BBS.

When you log off the Keep Current BBS system, an exit screen, shown in Figure 2-4, appears indicating the expiration date for the Keep Current Express service. To ensure uninterrupted access to the Keep Current BBS, renew your Keep Current Express service before the date shown.

**Figure 2-4**  
*Exit Screen*



## Uncompressing the Keep Current Algorithms

The downloaded file is a self-extracting compressed file called *vv\_zzzzz.exe* where *vv* is the version number of the file and *zzzzz* is the device ID.

This file must be executed on your PC to uncompress it. Once it is uncompressed, up to three additional files are generated.

File Name	File Description
<i>vv_zzzzz.KCx</i>	Algorithm file
ADAPTERS.SYS	System file, present only if the device requires new hardware
DEVFNOTES.SYS	System file, present only if the device requires new footnotes

The KCx extension indicates that this is a Keep Current (KC) algorithm and the (x) is the version letter of the Keep Current algorithm. The version number VV indicates the required version of system software. The .KCx file and .SYS files are transferred to a 3.5-inch DS/DD disk that has been previously formatted in UniSite.

To uncompress and transfer the resulting files where <d:> is the drive containing the 3.5-inch disk, use the following command:

`<filename> <d:>`

For example, 36\_3284 B:

If you have existing .SYS files on your disk, you are prompted to overwrite these files; answer Yes to assure that you use the latest system files.

Substitute the appropriate drive letter if your 3.5-inch drive is configured for a disk drive other than B.

Once you have transferred the appropriate files to a disk, label it **Keep Current Algorithms** and add the required system software revision. This disk must be used instead of the regular algorithm disk to select a Keep Current algorithm.

To select a Keep Current algorithm:

1. Remove the regular algorithm disk from your UniSite and replace it with the Keep Current algorithm disk. Make sure you are using the correct version of system software.
2. From the Main Menu, press **[S]** to display the Manufacturer's menu.
3. Select KEEP CURRENT from this menu. All available Keep Current algorithms are displayed.

From this point forward, the operation is the same as using a regular algorithm. Refer to your *UniSite User Manual* for details.

## Compatibility

You must have UniSite system software version 3.7 or later to use the Keep Current algorithm feature.

You must have PROMlink version 6.0 or later to select Keep Current algorithms from PROMlink. To select a Keep Current algorithm in PROMlink, bring up the device selection window and select KEEP\_CURRENT. A window with the available Keep Current algorithms is displayed.

## Keep Current Algorithms and Software Updates

Each Keep Current algorithm is designed to work with a particular version of system software. When UniSite displays the available Keep Current algorithm(s) on the Keep Current Part List screen, it filters out the Keep Current algorithms that are invalid and incompatible with the installed version of system software.

A Keep Current algorithm and a version of UniSite system software are compatible when the numbers to the left and immediate right of the decimal point match. For example,

Algorithm Version	System Software Version	Compatible
3.51	3.5	Yes
3.7	3.7	Yes
3.6	3.7	No

Keep Current algorithms are valid for one major release of software because the Keep Current algorithms are included with the next release of system software.

The following example illustrates a typical Keep Current scenario:

- In May, you update your system software to version x.4. At the same time, you enroll in the Keep Current Express Subscription Service.
- In June, Cruft Technologies announces a new device, the Cruft 1263.
- A week later, Data I/O announces support for the Cruft 1263 and places a Keep Current algorithm for the Cruft 1263 on the Keep Current BBS.
- The next day, you call the Keep Current BBS and download the new algorithm for the Cruft 1263.
- In August, Data I/O releases version x.5 system software, complete with the new algorithm for the Cruft 1263.
- You update your UniSite to version x.5 system software. The algorithm for the Cruft 1263 is part of the system software.

With Keep Current algorithms, you get immediate device support, rather than having to wait for the next release of system software. For more information on using the Keep Current algorithm, see one of the following sections in the *UniSite User Manual*: "Tutorial"—Session 2 in Chapter 4, "Commands"—Select Device in Chapter 5, "CRC"—n4D], xxx...xxx33], and xxx...xxx34] commands in Chapter 6.





## End User Registration

Please complete and return this card so we can keep you informed of product updates and upgrades. Also, use this card to notify us if your address changes or if you are the new end user of this product.

### Customer Information

☐ Check if this is a new address or end user.

Name \_\_\_\_\_

Department \_\_\_\_\_ Mail Stop \_\_\_\_\_

Company \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Country \_\_\_\_\_

### Product Information

Product Name \_\_\_\_\_

Version Number \_\_\_\_\_ Serial Number \_\_\_\_\_

## Comments on Documentation

Product Name \_\_\_\_\_

Manual Part Number (on Title Page) \_\_\_\_\_

Why do you use the manual?    ☐ For setup    ☐ For reference    ☐ For problem-solving

Can you find the information you need quickly? \_\_\_\_\_

Is the information accurate and complete? \_\_\_\_\_

What sections of the manual do you find most useful? \_\_\_\_\_

What information would you like to see added? \_\_\_\_\_

How would you rate the overall effectiveness of the manual?    (Low) 1 2 3 4 5 (High)

Additional comments \_\_\_\_\_

Name \_\_\_\_\_

Department \_\_\_\_\_ Mail Stop \_\_\_\_\_

Company \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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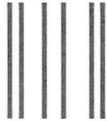
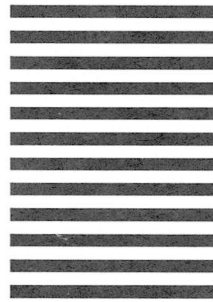
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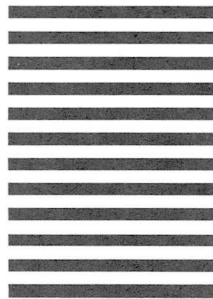
**DATA I/O** Corporation

Technical Publications Manager

10525 Willows Road N.E.

P.O. Box 97046

Redmond, WA 98073-9987



# Programmer Suggestion/Problem Report

*If you have a suggestion for improving the 2900 or UniSite, or encounter a fault in the operation of either programmer, please complete this report and return it to Data I/O. Thank you for your input.*

Date submitted \_\_\_\_\_

FOR DATA I/O USE ONLY

Data I/O SPR Number \_\_\_\_\_

Entered by \_\_\_\_\_

## Customer Information

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_ Department \_\_\_\_\_  
Address \_\_\_\_\_ Mail Stop \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP/Postal Code \_\_\_\_\_  
Country \_\_\_\_\_ Phone ( ) \_\_\_\_\_

## General Information

Device Manufacturer \_\_\_\_\_ Device Part Number \_\_\_\_\_ System RAM Installed \_\_\_\_\_  
System Software Version \_\_\_\_\_ Algorithm Version \_\_\_\_\_ Serial Number \_\_\_\_\_  
How critical is this problem to you? ☐ Extremely ☐ Moderately ☐ Low impact  
Is your programmer covered by a support agreement? ☐ Yes ☐ No

## UniSite Information

Modules installed ☐ Site 40 ☐ Site 48 ☐ ChipSite  
☐ PinSite ☐ SetSite ☐ Other  
Number of pin drivers installed \_\_\_\_\_ System EPROM Version \_\_\_\_\_  
Second disk drive installed? ☐ Yes ☐ No

## 2900 Information

Libraries installed ☐ 28 EPROMs ☐ 44 EPROMs ☐ 44 PROMs  
☐ 44 Micros ☐ 24 PLDs ☐ 28 PLDs  
☐ 44 PLDs ☐ Other

## Description of Problem/Symptoms

Use the back of this report to describe the problem and the steps necessary to create it. Include references to the menu screen where the problem appears, I/O format, device type (manufacturer and number) and system defaults. Include an example on disk, if appropriate. Return your completed report to your local Data I/O representative or the nearest Data I/O office listed below.

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Telex: 152167 (Inside U.S.)  
4740166 (Outside U.S.)

**U.S. Customer Resource Center**  
(800) 247-5700

**Customer Support BBS**  
(206) 882-3211 **Data I/O San Jose**  
1701 Fox Drive  
San Jose, CA 95131  
Telephone (408) 437-9600  
Fax: (408) 437-1218

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20 Cotton Road  
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Telephone (603) 889-8511  
(800) 858-5803 (NJ & NY only)  
Fax: (603) 880-0697

### Data I/O Japan

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(03) 432-6093 (Other)  
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Mississauga, Ontario  
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Fax: (416) 678-7306

### Data I/O-Instrumatic Electronic

Systems Vertriebs GmbH  
Lochhammer Schlag 5a  
D-8032 Grälfing  
West Germany  
Telephone (0)89 858580  
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1077 XX Amsterdam  
Telephone: +31 (0)20-6622866  
Fax: +31 (0)20-6624427  
Telex: 16616 DATIO NL

**DATA I/O**  
Corporation

Describe problems and/or symptoms below.

FOR DATA I/O USE ONLY	
Manual Update	Date Completed
Code	Date Completed
Test Procedures	Date Completed
Retest	Date Completed
Close Date	Date Completed

# Programmer Suggestion/Problem Report

*If you have a suggestion for improving the 2900 or UniSite, or encounter a fault in the operation of either programmer, please complete this report and return it to Data I/O. Thank you for your input.*

Date submitted \_\_\_\_\_

FOR DATA I/O USE ONLY

Data I/O SPK Number \_\_\_\_\_

Entered by \_\_\_\_\_

## Customer Information

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_ Department \_\_\_\_\_  
Address \_\_\_\_\_ Mail Stop \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP/Postal Code \_\_\_\_\_  
Country \_\_\_\_\_ Phone (    ) \_\_\_\_\_

## General Information

Device Manufacturer \_\_\_\_\_ Device Part Number \_\_\_\_\_ System RAM Installed \_\_\_\_\_  
System Software Version \_\_\_\_\_ Algorithm Version \_\_\_\_\_ Serial Number \_\_\_\_\_  
How critical is this problem to you? ☐ Extremely ☐ Moderately ☐ Low impact  
Is your programmer covered by a support agreement? ☐ Yes ☐ No

## UniSite Information

Modules installed ☐ Site 40 ☐ Site 48 ☐ ChipSite  
☐ PinSite ☐ SetSite ☐ Other  
Number of pin drivers installed \_\_\_\_\_ System EPROM Version \_\_\_\_\_  
Second disk drive installed? ☐ Yes ☐ No

## 2900 Information

Libraries installed ☐ 28 EPROMs ☐ 44 EPROMs ☐ 44 PROMs  
☐ 44 Micros ☐ 24 PLDs ☐ 28 PLDs  
☐ 44 PLDs ☐ Other

## Description of Problem/Symptoms

Use the back of this report to describe the problem and the steps necessary to create it. Include references to the menu screen where the problem appears, I/O format, device type (manufacturer and number) and system defaults. Include an example on disk, if appropriate. Return your completed report to your local Data I/O representative or the nearest Data I/O office listed below.

### United States

Data I/O Corporation  
10525 Willows Road N.E.  
P.O. Box 97046  
Redmond, WA 98073-9746  
Telephone: (206) 881-6444  
Fax: (206) 882-1043  
Telex: 152167 (Inside U.S.)  
4740166 (Outside U.S.)

**U.S. Customer Resource Center**  
(800) 247-5700

**Customer Support BBS**  
(206) 882-3211 **Data I/O San Jose**  
1701 Fox Drive  
San Jose, CA 95131  
Telephone (408) 437-9600  
Fax: (408) 437-1218

### Data I/O New Hampshire

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